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- General coverage from 150kHz to 30MHz
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- 12 internal memories (push-button) with scanning functions
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And so much more!

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Specifications:
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Sensitivity: AM, SSB & CW: 10dB or better (S+N/N);
FM (N): 20dB or better (S+N/N)
Selectivity: AM (W): 6kHz (~6dB), 15kHz (~50dB)
AM (N), SSB, CW 2.7kHz (~6dB), 8kHz (~50dB)
FM (N): 12.5kHz (~6dB), 30kHz (~40dB)
Antenna Imp: 50 ohms and 500 ohms (VHF conv 50 ohms)
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Cat D-2820
Alternative: FRG-8800 SW — 2MHz
Limited Stock! $899

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Yes! 118-174MHz from your FRG-8800. And it fits completely inside the set — operation is completely automatic. Full dial or pushbutton selection, same features as standard set.

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Never Before! A scanning receiver that has so many features, offers so much. And it's absolutely ideal for the amateur, too! It offers continuous coverage between 60 and 905MHz, in all modes (SSB up to 460MHz), with FM and AM in both wide and narrow bandwidth. But that's not all!

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Impressed? Not half as impressed as you will be with one in your shack!

Specifications:
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Modes (3dB bandwidth)
FM (N): 15kHz 0.5uV Sens (12dB SINAD)
FM (W): 180kHz 1.0uV Sens (12dB SINAD)
AM (N): 2.4kHz 1.0uV Sens (10dB S+N/N)
AM (W): 6kHz 1.5uV Sens (10dB S+N/N)

Conversion:
Triple for FM (N) AM & SSB, Double for FM(W)
IFs: 45.75MHz, 10.7MHz and 455kHz
Image rejection:
60-460MHz — 50dB typical
460-905MHz — 40dB typical

Memory Channels: 100
Power Supply: 12-15V DC 550mA (lithium cell back-up)

LIMITED STOCK! $799
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Cat D-2825

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WHY ISN'T JOE IN THE INSTITUTE?

We have all encountered Joe (or Fred or Jim or Bill or Sue) many times in our amateur careers. They have become particularly obvious during the period of the WIA 75 Award, from last March until the end of our 75th Anniversary Year on 31st December 1985. Now they will recede once again into comfortable anonymity. Of course, they are the active amateurs who do not belong to the WIA, so had to admit, with some embarrassment, when asked for their 75 Award membership number that they didn't have one. Mostly, they then felt obliged to give a reason why. Usually it was some variation on "haven't got around to it", or "off the air while moving house, so didn't bother to renew", or (more rarely), "can't agree with what they are doing about such-and-such". Some even said "it costs too much".

I would like to address a few New Year words to Joe (or Fred or Jim or Bill or Sue). Perhaps you, the WIA member whose AR this is, might show it to your nearby Joe (or whoever). Obviously this magazine is a start. Even if you were to receive only 12 issues of AR and nothing else for your annual subscription, it is still cheaper than almost any other amateur radio magazine. But there is much more! Throughout Australia you have the services of the WIA QSL Bureau. You can buy a wide range of technical books at competitive prices from the Magpups service, via your State Division. You can buy components for home-brew projects from the service run by some Divisions. But more than anything else, you have the benefit of the status and conditions applying to the Amateur Service in Australia, almost entirely achieved to your advantage by WIA funds and effort, and WIA negotiation with the Department of Communications. Can you really feel happy about using WIA-funded repeaters on VHF and UHF if you haven't contributed to their installation and maintenance? How about, as a non-member participating in WIA contests?

WIA negotiation with DOC has produced such benefits as the full recognition of the Amateur Service and its requirements, as spelled out in the new Radiocommunications Act. The right to handle third-party traffic and to use phone-patch when needed have come about entirely because of WIA representation. Our status with DOC, the Government, and the world is such that our 75th Anniversary Dinner was attended by the Secretary General of the ITU, the Minister for Communications, and leading amateurs from 14 countries. Goodwill messages were received from the Prime Minister of Australia and the President of the United States of America.

You can be proud to belong to the world's oldest amateur radio society. Perhaps you still don't like some of our policies. Join us and work to change them. You can have no effect by remaining aloof, but all members' opinions are respected in our most democratic of organisations. You, Joe, are even free to remain a non-member and still benefit from WIA activities. But is that really what you want? Yes, Joe, why aren't you in the Institute? Why not resolve for 1986 "I am going to join the WIA"?

Bill Rice VK3ABP

Editor AR

BAND PLANNING

At the 1985 Federal Convention, the matter of Band Planning came in for considerable discussion. The Federal Council realised that well-considered Band Plans could not be developed over a few days by seven councillors, who might not even be experts in the field. Consequently, the Council opted to develop Band Plans on a continuing basis with the Federal Technical Advisory Committee preparing draft proposals for publication in Amateur Radio. Comments would be sought from members and refined Band Plans produced for ratification by Federal Councillors at the next WIA Convention.

This paper, prepared by a member of the Executive, aims to review the background to Band Planning, and set the scene for specific band oriented consideration papers, which will be published throughout the year.

HISTORICAL

In the beginning of "wireless", there was no Band Planning and indeed, little, or no legislation. It was only when the commercial applications of wireless communications became apparent, and escalating uncontrolled use of the spectrum led to interference and chaos, that controls were introduced. Many amateurs do not realise how near their hobby was to becoming totally prohibited due to interference to emergency traffic, around 1912.

The early international Band Planning took the form of "place the amateurs above 200 metres, they will not be a problem there". As time progressed, spectrum allocation became more involved and a series of World Administrative Radio Conferences (WARC) took place. The WARC of 1927, 1947, and 1979 probably had the greatest impact upon the amateur community; the first because it was the first international conference in 1927, 1947, and 1979 probably had the greatest impact upon the amateur community; the first because it was the first international conference held, the second because of its immediate post war nature, and the ability of amateurs to use technologies and surplus equipment arising from war efforts. The third was important because of the combination of technological advances, and the need for the amateur community to speak up to retain their existing allocations under pressure from developing nations for HF allocations.

Within this frame-work, spectrum management is carried out in detail at the national level. Some nations have chosen to tightly regulate their amateur allocations, as to authorised modes, band-widths, powers and licence grades (eg USA). Others have made broad allocations, and set general regulations for orderly operating. For example, listen before transmitting, avoid interfering, and respond to emergency calls; as has happened in Australia. This latter set of circumstances accords with our stated policy of seeking deregulation, but it brings with it an implied responsibility attitude from the amateur community, which must agree and abide by its own self-generated band usage plans. Furthermore, this must encompass both the members of the national society (the WIA), and non-member amateurs.

WORLD ADMINISTRATIVE RADIO CONFERENCES

The WARC's that have influenced amateur radio in some significant manner, and some outlines of their effect are now described.

Washington 1927 International Conference

This first international conference followed after several US National Radio Conferences (1922, 1923, and 1924). The US amateurs, by this stage, had a number of harmonically related bands on 80, 40, 20 and five metres wave-length. The Conference agreed to ban spark transmissions after 1930, and allocated the spectrum from 10kHz to 60MHz. US amateurs, who had 12MHz total of spectrum prior to the Conference, ended up with 7.5MHz in all, but were covered now by international treaty and the harmonic relationship was confirmed.

At Madrid, in 1932, radio frequencies were assigned to international aviation routes.

WARC 1947 Atlantic City

At the Atlantic City Radio Conference, in 1947, new amateur allocations were made at 21, 144, and 420MHz. Also, other UHF/Microwave frequencies. Changes were also made to the 3.5, 7, and 14MHz amateur segments.

This was the first evidence of the appearance of amateur allocations, differing from ITU Region to Region, depending upon the political clout of the Region, and their collective attitude to amateur radio.

Geneva Radio Conference 1959

Pressure on the 7MHz band allocation continued at Geneva in 1959, coupled with pressure to re-allocate the top of the 28MHz band. In the event, 7MHz suffered and amateur allocations differed between Regions, whilst the 28MHz bids collapsed last the Conference.

The contributions to the recent International Geophysical Year (IGY) by
amateurs helped their credibility, due to the period of visibility leading up to the Conference.

The need for a strong 1ARU presence was demonstrated, for although over 90 nations were represented at Geneva, less than 60 had established amateur radio societies.

Of particular interest to Australian amateurs was the drastic anti-amateur proposals developed by the national authority, and kept secret from the amateurs until just before the Conference. The late John Moyle VK2JU, representing the WIA, was attached to the Australian delegation and he made a contribution, to an outcome that was of major concern, demonstrating the value of amateur representation on the national delegation.

**WARC 1979**

Nearly every amateur band was varied in some way by WARC79. Three bands were allotted, and the amateur satellite service was formally established.

Changes were necessarily slow in the implementation and are being influenced by falling sunspot activity. The national Band Plans have been issued and now the amateur community is actively involved in determining its own Band Plans, taking due cognisance of neighbouring amateur users. In particular, the use of telephony on the 10MHz band is a matter of difference between the Australian amateur and his/her colleagues in most overseas countries.

For Australian influence was the inclusion of two of their number in the official delegation. David Wardlaw VK3ADW, and Michael Owen VK3KI contributed significantly to the Australian presence at Geneva.

**GENTLEMAN’S AGREEMENTS**

Many years ago, Australian amateurs realised the advantages, conferred on them by international band and government regulations, had to be supplemented by self-disciplinary constraints as to band mode usage. This led to "Gentleman's Agreements", so named because all amateurs were believed to be gentlemen who would voluntarily abide by these un-enforceable agreements on band occupancy.

In those days, CW and AM were the predominant modes, most transmissions were crystal locked to frequency and control of occupied bandwidth was not as effective as it is today. Gentleman's Agreements were derived, to a large extent, from international band planning, for DX had (and still has) a considerable influence on operating practices.

The agreements were able to absorb the change, from AM to SSB, with little worry as a reduction in occupied bandwidth per user, and consequent increased number of users able to communicate without interference resulted. However, the introduction of narrow band modes has brought us to the stage where they are not developed in too fine a detail. Often allocation of band space infrequently to achieve acceptability by a majority of operators, yet leading to ratification at annual conventions.

The need for a strong 1ARU presence was demonstrated, for although the development of overseas plans is, unfortunately, complicated by the secondary service and other applications, including data communications and message storage devices (electronic mail boxes).

**BAND PLANNING PHILOSOPHIES**

The matter of Band Planning is one open to much emotional expression, it is an attempt by Telecommunications Administrations to bring about a greater band width than CW, yet less than SSB and the requirement for beacons and like services overtaxed the existing system.

A similar pressure was placed on VHF Gentleman's Agreements, by the high demand for frequency pairs, for FM repeaters. In hindsight, receiver filter technology barely kept pace with the narrowing of FM channel allocations.

Ultimately, this pressure led to the near collapse of "bare bones" gentleman’s agreements as first formulated and caused their replacement with more complex, but still voluntarily adopted Band Plans.

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As well as the mode bandwidth requirement there are also adjacent channel compatibility considerations. Here the weak signal (EME) segment is the most demanding and is often placed on a band edge to provide some isolation. However, care should be taken to examine the national Band Plan for the spectrum user. Adjacent to the amateur band must be a non-neighbour for some amateur modes.

**Dynamic Band Plans**

- It is obvious that amateur Band Planning must move with the times and remain up to date, yet changes must not be frequent or drastic in nature or they will be ignored and chaos will reign (again!). Of recent years, there has been a move to Band Plans, built upon band space allocated to telegraphy and telephony standards, that are known as Band Planning in an evolutionary way. Layered Band Plans have a deal of transparency (to use computer 'argon') and appear to satisfy a wide range of users and modes.

**Effective Promulgation**

- Band Plans can be forward thinking, provided they are not developed in too fine a detail. Often allocation of band space for a range of modes (having differing bandwidths) will suffice. It matters not, what detailed intelligence is being carried, provided the modulation mode employed is in its assigned band segment. As an example, digital "slow scan" television can be transmitted over a range of baud rates and it is the Baud rate which dictates the required bandwidth, and hence the modulation mode selected.

**Promulgation of Band Plans**

A Band Plan is ultimately as good as the notice people take of it, and their eventual compliance with it. If Band Plans change too frequently, or too drastically, adherence will be low through no fault of the average user. Indeed, it has been cynically said the re-learning time span of an obstinate amateur is one life span (his/hers).

The Band Plan has to be brought to the attention of as many operators as possible; the better the plan, and the more non-members, alike, that can adopt an attitude of "why should I co-operate? I did not agree to this plan" and at times members in the former group adopt a like attitude. In these circumstances, the layered plan has the greatest possibility of success, and as a result of the foregoing summary, Band Plans should be simple to apply and change infrequently to achieve acceptability by a majority of operators, yet provide adequate guidance for the way-out specialist wondering where to radiate his signal with the minimum of interference.

**Specific Band Plans**

- It is not intended to go into the details of Band Plan allocations in this paper, but rather to highlight certain areas which need consideration in the near future.

Following dissatisfaction with discrete segment Band Plans, particularly with the introduction of exclusive narrow band mode segments, the 1985 WIA Convention adopted the layered Band Planning approach.

Furthermore, it recognised that Band Planning could not be carried out effectively over a few days at a convention. Consequently, the Council directed the Federal Technical Advisory Committee (FTAC) to develop draft Band Plans for circulation and comment throughout the year, leading to ratification at annual conventions.

**HF Plans**

Here the matters of interest include restructuring the generally acceptable existing plans into layered plans, obtaining agreement on narrow band mode segments, beacon allocations, and the conversion of regions of telephony on 10MHz.

**VHF/UHF Plans**

Because of the high interest in FM speech communications over the last 15 to 20 years, these bands have been subjected to considerable planning with regrettably some degree of upheaval. In those days, CW and AM were the predominant modes, most users having been accommodated in some tangible way. This could range from dedicated spectrum space for popular modes to co-locating less used modes, which do not mutually interfere. Often allocation of a general, or all modes segment will suffice.

**Spectrum Allocated According to Requirements**

- Not only must all band users be considered, they must also be reflected in the plan according to their perceived importance.

Often this is influenced by the popularity of the various modes, but it is also conditioned by the modes bandwidth demands. The allocation is always a compromise for a wide band mode like ATV, in being allocated say one channel, demands a greater bandwidth per active operator than say SSB to RTTY.

As well as the mode bandwidth requirement there are also adjacent channel compatibility considerations. Here the weak signal (EME) segment is the most demanding and is often placed on a band edge to provide some isolation. However, care should be taken to examine the national Band Plan for the spectrum user. Adjacent to the amateur band must be a non-neighbour for some amateur modes.

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PHONE PATCH UPDATE

Considerable progress has been made on phone patch for radio amateurs following two meetings in 1985, between the WIA and Telecom Australia.

It was through face-to-face discussion that both parties achieved a greater understanding of the issues surrounding phone patch. Radio amateurs have been puzzled why Telecom had restricted access to the interconnection of their radios to the telephone network.

It would also have been true in the past to say Telecom had not fully understood, and appreciated the nature of the Amateur Radio Service. The WIA, following discussions with Telecom, understands that amateur phone patch cannot be considered in isolation.

The interconnection of radio to the national telephone network is a complex matter which, obviously, has possible wide commercial application. Telecom draws a distinction between radio (voice) interconnection, and the interconnection of hobby computers to the telephone network.

Computer hobbyists are allowed to use type approved modems to interconnect their computers direct into an ordinary phone socket. But this type of interconnection cannot be used as an argument to get unrestricted phone patch for radio amateurs.

The main reason Telecom has restricted radio/telephone Interconnection is to stop long distance radio links being set up in competition to the trunk telephone system. Telecom has a national carrier role, and is required to supply telephone services at a uniform price throughout Australia. This relies on cross-subsidies from the revenue making parts of the telephone network — it believes radio interconnection could 'cream-off' revenue.

Also, it is seen as a threat to its national carrier role, the mobile telephone service — it doesn't want direct commercial competitors in this market area. However, it does permit, with restrictions, individual businesses, and common-user groups, to interconnect radio and the phone network.

There is a scale of fees charged, restrictions on coverage area, and a ban on handling traffic for third parties.

At meetings between the WIA's Federal Executive member, Jack O'Shannassy VK3SR WIA Victorian President, Jim Linton VK3PC, and Telecom Representatives during August and October, both the Institute's and Telecom's positions were canvassed. The WIA opposed the restriction on double-ended phone patch within Australia — that is radio-phone-radio-phone interconnection. Telecom stated that this restriction applied, not only to radio amateurs, but all radio interconnections, because of its potential to bypass the Public Switched Telephone Network, and cost Telecom revenue.

The WIA does not accept that the use of double-ended phone patch by the Amateur Radio Service would have an impact on Telecom revenue, and it will continue to seek double-ended phone patch for all radio amateurs. However, as a result of cordial negotiations with Telecom, double-ended phone patch is now available for emergency use and training (see below).

The $2 per month access charge levied on radio amateurs with phone patch through their telephone account is considered by Telecom to be the lowest possible charge it could set.

What emerged out of the Telecom/WIA talks were, special conditions for the Amateur Radio Service, which follow, with WIA clarification in brackets:

The normal mode of phone patch operation is only at a home station at one end of a radio-communication service.

In a normal single ended phone patch connection, normal third party requirements will apply to conversation content. Phone patch access for mobile units will be permitted via a home station, but not via a repeater. Phone patch connections to repeaters will not be permitted. (Repeater contacts can be phone patched, but only via a home station).

Under WICEN operation, or other emergencies involving natural disaster and/or life threatening situations, together with unavailability of normal communications, double ended phone patch will be permitted as a special exception.

Under duly authorised WICEN Exercises, training involving the use of double ended phone patch will be permitted on a self regulation basis by the Wireless Institute of Australia. The WIA will be responsible for authorising such exercises and will keep a record of such exercises and training arrangements. These records will include the details of the radio amateurs involved, the call signs, and period of authorisation. (For WICEN training, phone patch in all its forms can be used. Telecom recognises the need to train with equipment that will be used in emergencies). This authorisation procedure will be available to any radio amateur wishing to establish local community emergency arrangements to the Institute's standards of service. (This can include appropriate community service activities and public displays of the hobby).

The above arrangements and conditions will be reviewed 18 months after publication of the interface equipment details in the Wireless Institute Journal.

The WIA plans further negotiations with Telecom, and will keep members advised.

Compiled by Jim Linton VK3PC, with the cooperation of Jack O'Shannassy VK3SR & Telecom Australia.

WIA Seventy Fifth Anniversary

ADDRESS TO THE WIA 75TH ANNIVERSARY DINNER BY MR R E BUTLER

Mr Chairman, Your Excellency, Distinguished Visitors, Ladies and Gentlemen,

I am deeply honoured for the invitation to speak at the 75th commemorative Dinner of the Institute of Australia, the oldest Institute of its kind in the world, and to bring the visitors of the ITU as well as many amateur radio enthusiasts in contact with 4U1ITU.

Amateur radio is the only hobby provided for by the International Treaty, ie: the Radio Regulations annexed to the International Telecommunication Convention. The Radio Regulations define amateur radio as "a service of self-training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest."

Furthermore, in 1971 the World Administrative Radio Conference for Space Telecommunications provided for the Amateur Satellite Service. Those of you who are familiar with international legislative processes would realise that these unique world-wide recognitions as well as accompanying obligations did not emerge over a few months, years or even decades. They emerged from the character, and I may add, the reliable and solid contribution of the renowned radio enthusiasts pursuing their curiosity into the radio frequency phenomenon investigation and study, as well as their enthusiasm for dialogue and community experience with others locally, regionally and indeed globally. These characteristics have always been manifested in the energies of your Institute; indeed the history of telecommunications in Australia is studded with the contributions of the Institute's founding fathers and its members in the radio branch of telecommunications. Even before the formal establishment of the Institute, the example and brilliance of Sir Charles Todd and his team for the completion of the overland telegraph, began to orientate attention to wireless transmission. Professor William Bragg gave the first public demonstration of wireless telegraph apparatus at the University of Adelaide in September 1897, and then, in 1899, after correspondence with Marconi and financial assistance from Postmaster-General Sir Charles Todd (as always the 'Post Office' was a big help in advancing new communication ideas), wireless telegraphy messages were successfully transmitted from West Terrace to Henley Beach in South Australia.

Let us reflect, too, on the significance of H W Jenvey's contact with...
and prepared the way for the systematic division of the radio frequency spectrum, as we know it today.

Radio amateurs were thus involved in the exploration of space long before its material use with space stations and satellites.

Always evident by an active presence in world administration radio conferences, they have earned their formal recognition in the ITU statutes. Conscious also of the importance of sharing their knowledge with others, the IARU, of which your Institute is an active member in Region 3, is now co-operating with the ITU with a view to organising training courses concerning the administration of amateur radio in Africa and Asia and the Pacific.

Allow me to salute the predecessors who set the promotion of the radio techniques in action and I wish the Institute long service and prosperity.

R E Butler
Secretary-General
International Telecommunication Union
9th November 1985

NATIONAL FOX HUNT CHAMPIONSHIP

The inaugural National Fox Hunt Championships were held in conjunction with the Wagga Wagga Convention on the weekend of 26-27th October 1985, as part of the 75th Anniversary Celebrations of the WIA.

Teams representing the Australian Capital Territory, New South Wales, and Victoria took part and hunts were held on 3.5, 28, 144, and 432MHz over the two days and night hunts on 144MHz were held on the Saturday night. The championships varied between the two Victorian teams of VK3BMV and VK3BLI, with the eventual winner being Ewen VK3BMV.

Ewen's team included Geoff VK3CGH and Ian VK3BRY, and they were the recipients of the trophies and the Icom IC-2A, which had been kindly donated for the occasion by Icom Australia Pty Ltd.

Second Place was won by John VK3YEA, Jannet, and Henk VK3BLI. They were presented with the GFS Electronic prize — a VHF UHF Power Meter.

FROM LEFT: Ewen VK3BMV, Champion Fox Hunter, and Greg VK3BGW.

Henk VK3BLI, and his team of John VK3YEA and Jannet took out the second prize, which was a VHF/UHF power meter kindly donated by GFS Electronic Imports.

Ewen was the winner of the Victorian Championships and was sponsored for travel and accommodation by the Victorian Division, so all the practice certainly paid off!

Special thanks to Icom Australia Pty Ltd, GFS Electronic Imports, Koishi Fukushima and Greg Whiter for their generous donations and support of this auspicious occasion. Also, thanks to the Victorian Division of the WIA and Paul VK3DIP for the loan of fox transmitters. The following from the Wagga Wagga Club also deserve special thanks for their assistance in conducting this event. Peter VK2KZZ, Geoff VK2KCL, and Peter VK2APW.

It is expected that this will become an annual event and discussions are now taking place for another location to host the event this year. This will be published as soon as possible to allow as many entrants as possible to attend.

The first prize was presented by Edd Webb, proprietor of Webb Electronics, the Albury agent for Icom equipment.

AIR-WOUND INDUCTANCES

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Take the hard work out of Coil Winding — use "WILLIS" AIR-WOUND INDUCTANCES

WILLIAM WILLIS & Co. Pty. Ltd.
98 Canterbury Road, Canterbury, Vic. 3126
PHONE: 836 0707

Page 6-AMATEUR RADIO, January 1986
MORSE CODE PRACTICE GENERATOR

Lindsay Stronell VK3BRV
214 Jasper Road, Bentleigh, Vic. 3204

This generator is, in fact, a computer programme developed on and for an IBM-PC compatible personal computer. The object of the exercise was to produce a simple programme to generate Morse code for practice receiving skills.

However, every time it was run, I thought of a new wrinkle to add to it, hence it seemingly grew like Topsy. So a more addition that may be added, but as yet I have not got around to doing, is to use one of the output ports to pass the code to the outside world, both as a tone and a TTL level signal. Maybe someone else may be able to do this.

When the programme is run, the first page on the screen asks if you are using a colour or monochrome display.

The second page asks if you want to have 10 WPM at 800Hz tone or, if you want to set the speed yourself. You can then change the speed to anything between five and 50 WPM and the tone between 200 and 5000Hz. Also, you can send the characters at your chosen speed, whilst the spaces between them can be set to any lower speed, both between five and 50 WPM.

I have found that the Morse is much easier to learn if the characters are sent at the speed required for the test, 10 to 12 WPM, and to start with the spacing set quite slow. This enables you to hear the sound of the character as a whole and not to try to count the individual elements as dots and dashes. As you progress, just increase the spacing speed.

Just to make things a little harder and to stop the learner journalising, the code is generated as groups of random letters with a smattering of numbers. For anyone to copy this 100 percent at the exam speed, passing the exam will be a piece of cake.

Good luck . . . .

AR

Continued page 8
A total of 29 entries were received from Australia, North America, and Europe, making this international activity for the WIA's Anniversary Year a success.

Sadly, all VK entrants were from Victoria, despite widespread publicity no RTTY artist, or RTTY picture collector outside Victoria entered.

It is hoped this competition will spurn the art of making RTTY pictures in Australia.

Judging Co-Ordinator, Fred McConnell VK3BOU, has offered to conduct another competition which is to be announced by the WIA Victorian Division, during this year. Fred and his fellow judges agreed the entries received were of a high standard.

There were three categories:

- **A** — Best hand-generated original submitted by its author, other than VK
- **B** — Best hand-generated original submitted by VK
- **C** — Open-Section ... for non-original works, or computer-generated RTTY pictures

An independent judging panel comprised — Peter Ford VK3YTB; Arthur Fraser VK3BII; Fred McConnell VK3BOU; Barry Nolan SWL; and Roger Harrison VK2ZTB. Each judge was required to submit a separate judging sheet for each entry, and was asked to allocate marks out of a maximum possible 10 for the following aspects of the picture.

<table>
<thead>
<tr>
<th>Aspects</th>
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<td>1 — Choice of subject</td>
<td></td>
</tr>
<tr>
<td>2 — Excellence of technique</td>
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</tr>
<tr>
<td>3 — Degree of difficulty</td>
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</tr>
<tr>
<td>4 — Formatting of the tape</td>
<td></td>
</tr>
<tr>
<td>5 — Suitability for publication</td>
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</table>

Judges points were then added up for each individual entry, with a maximum possible of 250 points.

All participants have been advised of the judging, and first in each category will receive a gold medallion. Category winners and placings follow.

### Categories

#### CATEGORY A

<table>
<thead>
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<td>1st</td>
<td>Macaw Parrots</td>
<td>Alfred La Vorgna WA2OJJ</td>
<td>206</td>
</tr>
<tr>
<td>2nd</td>
<td>Mr President</td>
<td>Alfred La Vorgna WA2OJJ</td>
<td>196</td>
</tr>
<tr>
<td>3rd</td>
<td>Felix the Cat</td>
<td>Alfred La Vorgna WA2OJJ</td>
<td>193</td>
</tr>
<tr>
<td>4th</td>
<td>Off the the Moon</td>
<td>Jas Cull VET7ARJ</td>
<td>182</td>
</tr>
<tr>
<td>5th</td>
<td>Sparkie</td>
<td>Jas Cull VET7ARJ</td>
<td>176</td>
</tr>
<tr>
<td>6th</td>
<td>Space Age</td>
<td>Jas Cull VET7ARJ</td>
<td>162</td>
</tr>
<tr>
<td>7th</td>
<td>My Home is my Castle</td>
<td>Klaus Zielinski DF7FB</td>
<td>156</td>
</tr>
<tr>
<td>8th</td>
<td>Tiger</td>
<td>Wolfgang Drewes DJ2OJ</td>
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#### CATEGORY B

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<td>2nd</td>
<td>Lance Coeur</td>
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<td>Puffing Billy</td>
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<td>4th</td>
<td>1949 MG TC</td>
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#### CATEGORY C

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<td>3rd</td>
<td>Fang, a Siamese Cat</td>
<td>R Tippett VK3DRT</td>
<td>176</td>
</tr>
<tr>
<td>4th</td>
<td>I'll Drink to that</td>
<td>R Tippett VK3DRT</td>
<td>171</td>
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Page 8 AMATEUR RADIO, January 1986
ABOVE: Felix the Cat. LEFT: Macaw Parrots.

ABOVE: Goofy. BELOW: Mona Lisa.

ABOVE: Mr President. LEFT: Sacre Coeur.
One obvious cause of TVI is front end overload caused by strong signals, either fundamental or harmonic, which fall within the broad pass band of the TV receiver. This problem has been aggravated by the installation of VCRs, which are usually connected between the TV antenna and the TV receiver. Lack of, or inadequate shielding or filtering and, in some cases, diode switching in the VCR and TV receiver, compound the problem.

A recommended step in the elimination of this problem is the installation of a high pass filter at the input of the TV receiver or the VCR-TV combination. Those available commercially vary from the cheap and useless to the adequate but expensive. The filter described here can be built for about $10 if all the components have to be purchased, and much less if the junk box is helpful.

The design is substantially one described in QST of February 1982. The construction details in that article were not really concise and this article is an attempt to describe a filter which can be constructed using components readily available in Australia, and PCB artwork, which can be easily produced so that the performance of the filter can be duplicated without recourse to expensive test equipment.

**CHOICE OF FILTER TYPE**

High pass filter choice is restricted to a decision between Butterworth and Chebyshev designs. Their relative merits can be briefly summarised by stating that the Butterworth filter has a flat response in the pass band, while the Chebyshev has a steeper attenuation slope, but has a ripple in the pass band. This ripple can be designed to be about 1dB, so it is no disadvantage for this application.

Having decided on the type of filter, the number of elements can be selected. The seven element filter has a good attenuation slope (42dB/octave) without becoming too bulky. Traditional design methods for filters usually end up with non-standard capacitor values, but Wetherhold used a computer to calculate designs based on standard capacitor values. This calculation provided parameters of all possible filter designs using standard capacitor values providing values of C and L, reflection coefficient, and cut-off frequency. Thus, small variations in cut-off frequency and reflection coefficient could be made to fit in with the standard capacitor values. In practical terms, if a cut-off frequency of 50MHz was desired and standard values of capacitor gave cut-off frequencies of 48 or 52MHz, the design would still be adequate. While a low reflection coefficient is desirable, a value of 20 percent produces a VSWR of 1.5. Most tabulated designs hold the reflection coefficient to six percent or less.

**CIRCUIT DESCRIPTION AND CONSTRUCTION**

The selected circuit configuration and component values are shown in Figure 1. The capacitors used are NPO and 10 percent tolerance. The inductors were wound on Amidon T37-0 toroids. This inductor type is self shielding, allowing the filter construction to be very compact. The required number of turns should be evenly spaced around the circumference of the toroid, leaving about 6mm between the ends of the winding. A little acrylic cement will hold the turns in place.

Double sided fibre glass PC board was used as a base for mounting the components, the underside being used as a ground plane. The upper surface pattern is shown in Figure 2, and takes the form of a micro-strip line. Both sides of the top copper foil were connected to the lower ground plane by drilling three holes at each outer edge and soldering wire 'rivets'. Layout of the components is shown in Figure 3.

Coaxial cable with Belling Lee type coaxial fittings was used to connect the filter into the TV antenna lead. If a line socket is used on one end of the filter and a line plug is used on the other, no modifications to existing equipment or antenna leads is necessary. The coaxial cable should be good quality 75 ohm (RG59 or similar). Solder at least some strands of the copper sheath of this cable to the connector, or later corrosion may introduce a whole new set of problems. At the PC board the braid was connected to both edges of the strip line using a tinned copper wire saddle.

The PC board fits neatly into a plastic 35mm film container. Holes to suit the type of cable used (usually 5 or 6mm) are drilled in the bottom and lid of the container and these items fitted over the coaxial cable before soldering the cable, complete with connectors to the PC board. Convenient lengths of cable were 100mm for the container end and 80mm for the lid end. The filter is symmetrical so input and output are interchangeable.
The finished filter.

PC ARTWORK

No special artwork or photographic processes are required. Both sides of the board are covered with vinyl label obtained at any stationery shop. The ground plane requires no etching. The top side if the board simply has the strip line pattern drawn on the label stuck to its surface and the parts required to be etched, removed with a razor blade or scalpel. Take care to remove all traces of the adhesive from the label, or etching will be patchy. The PC boards are so small that one large label will enable three boards to be produced. Similar results can be obtained using a Dalo resist pen, but labels are cheaper than buying a pen especially for one board.

The board is etched using the usual methods and Ferric Chloride. After etching, the vinyl labels can be removed using thinners.

PERFORMANCE

The performance of a high pass filter can be judged by tabulating the frequencies at which three or four values of attenuation occur, and by checking the response in the pass-band. The response in the pass-band is particularly important when the filter is connected to a TV receiver, since any unwanted vibrations can degrade TV picture quality. The pass-band in this filter was within 1dB between 56MHz and 430MHz.

The efficiency of the filter as an attenuator of frequencies outside the pass-band can be determined by checking F-Ap, F3dB, F30dB and F50dB. The last three are the frequencies at which the subscripted levels of attenuation occur, ie 3dB, 30dB and 50dB. F-Ap is the frequency at which the pass-band attenuation level first exceeds the peak amplitude of the pass-band ripple which in the case of this filter happens to be 1dB. In practical terms, it is the corner frequency. Measurements of the parameters were difficult with the equipment available, requiring interpolation and a certain amount of estimation. The shape of the response did conform to that calculated, with F-Ap at 56MHz, F3dB at 51MHz and F30dB at 35MHz. It was possible to determine F50dB, but the curve indicated increasing attenuation with decreasing frequency, so that the response at 14MHz could be expected to be about 70dB down.

CONCLUSION

This filter can be constructed without access to any special equipment or components. Four units have been built, and all show a similar response. Thanks are due to VK6NG, who assisted with the testing of the filters, and to VK6DV who tested one on his VCR, thereby clearing up his TVI problem.

Upon returning to the calling programme, this code must be executed.

```
OUT 251,1
```

Then code "1" is the code for a silent period. Any silent period code signifies to the SPU, the end of an utterance.

Incidentally, the code used in G$ in the above example will say "HELLO".

The programme listed below will enable the second operator to be put to use immediately, and is useful for establishing a vocabulary for him.

```
The programme allows you to:

TEST ALLPHONES, HEAR ALL ALLPHONE, CREATE WORDS AND TEST THEM AS YOU GO, LPRINT WORDS YOU FORM TOGETHER WITH THE CODES, REPEAT WORDS ENTERED, AND CHANGE CODE.

If you start each word with decimal 90, it then allows you to type in the word to be coded. Entering a decimal 99, will cause the code entered so far to be uttered and then present a selection menu.

If an invalid code is entered, a spoken error message will be uttered. Some people may find it mildly offensive, if this is so, change the code in line 150.

STARTING/STOPPING THE CASSETTE DRIVE

One of the four 'D' type latches in Z8 is used to start and stop the cassette, via the 4N28 opto isolator. The Q output will follow the D input whenever the C (clock) input is high.

To turn on the BC108, Q needs to go high and to do this we output a high on data lines D7 and D6 (OUT 251,192), this makes D and C inputs to Z8 high and the Q output will go high. To latch it in this condition we need to lower the clock input with OUT 251,128 and OUT 251,0 instructions.

To stop the cassette drive we need to output a high on D6 (C) and a low on D7 (D), ie — OUT 251,64.
```

5 ROUTINE TO TURN CASSETTE ON...
10 OUT 251,192
20 OUT 251,128
30 RETURN
35 ROUTINE TO TURN CASSETTE OFF...
40 OUT 251,64
50 RETURN
```

NOTES . . .

The prototype was built on veroboard and two subsequent ones built on PC boards. They can be mounted in a suitable box and connected to the micro, via the expansion unit edge connector. Mine is mounted in a box with a printer interface and the control, data and address lines paralleled to printer interface and the SPU.

One other thought, when the SPU was used in a satellite prediction programme; the voice slowed down more and more as the programme was developed. This was due to the fact that as more strings and variables were added to the programme, the time to access them increased. And, as the SPU part of the programme used strings to form the allphone codes for vocalisation, the rate at which codes were presented to the SPU decreased and it spoke in slow motion. To overcome this, I entered a machine language code above MEMTOP to output codes in real time to the SPU. The codes to be uttered were stripped from the strings in which they had been assembled and POKEd into memory above MEMTOP and below the machine code, ie — the machine code started at 31500 and the codes to be output were stored at 31000 up. Upon first firing up the system, 31000 was input before hitting the RETURN to reserve the memory required.
What's in a Name?

Alan Shawsmith, VK4SS
35 Whynot Street, West End. Old 4101

A description of what we were, or supposed to be as a fraternity, surfaces regularly in various magazines. It may be timely to take a more concerned look at ourselves in order to find the best possible term to fit our activities.

In this country, our first official designation was EXPERIMENTER. Between the years 1905 and 1925, WWI excepted, those who could convince the government they possessed sufficient knowledge, ability and integrity were issued with a licence, which allowed them to EXPERIMENT with WIRELESS. Some could receive only, not transmit.

It would be nice to add the tag COMMUNICATOR and or PATHFINDER to these very early few who found themselves infatuated with the miracle of being able to send signals through space. Without the aid of umbilical wires (telephone). However, such titles fit those who immediately followed this first stage of the art. History shows that the first decade of the 20th century was largely to much 'cut and try' EXPERIMENTING. Initially, it was necessary to understand the function and effects of resonances, capacity, inductance, detection tuned circuits, amplification, etc.

Also, as the theory of feedback was known and the vacuum tube still in its most primitive phase.

However, by the 1920s, the term PATHFINDER was applicable. The LF and MF spark transmission with limited range had given way to vacuum tubes capable of HF inter-continental daylight DX on HR Just like Edwin Armstrong's first step on the surface of the moon, which he described as 'small for him but big for mankind,' so the PATHFINDERS now began to realise the potential of the world as an electronic global village.

About this time, the word AMATEUR began to displace EXPERIMENTER. Several reasons can be offered for this. Firstly, more time was spent in air COMMUNICATING rather than in pure EXPERIMENTATION; MW broadcasting and commercially manufactured radios and component parts had put in an appearance and in Australia, the AMATEUR was introduced.

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and more dignified label. This brings us to the
justice and which will carry us into the 21st century
with an emergency, which they hope will never
certain countries. Again, only a minority are ever
— quite likely a difficult and polemic exercise.
Any
title, one internationally acceptable, that does
interest, either that of community service or self
AMATEUR, these titles are not very precise but,
RADIO SERVICE (PRS). Like the word
AMATEUR. Unfortunately it no longer realistically
population ever become part of it. WICEN
WiCEN is a State and Nationally organised body,
facility — very few!

When official approval is given, phone patching is
service as reciprocal arrangements exist with
associated with a quick willingness to assist
name? ?
other suggestions?

The truth is that most VKs are only interested in
greater respect and recognition from the
community at large.

AR

An entry calling for persons interested in the
formation of such a Club was posted in a
VICTORIAN RAILWAYS
INSTITUTE WIRELESS CLUB
— VK3RI
Australia’s Oldest Radio Club

The following is a brief history of the Victorian
Railways Institute Wireless Club, which is 59 years old
this year. A more complete history is being written to
mark the 60th anniversary, next year.

and compared to today, was a novelty.
Around 1930, the Club was able to boast a
membership in excess of 150 members.
During the war years, vital Club equipment
was placed in storage, and many members
joined the Armed Services and Merchant Navy.
A few did not return.

Broadcasting of music by amateur stations
was prohibited in the mid 1940s, which resulted
in a decline in membership. The advent of solid
state and transistor technology, and the Club’s
failure to keep pace, exacerbated the decline.
In 1954, the Club’s antennas, which were
attached to the clock tower above Elizabeth
Street, were removed due to a Royal Visit by
Queen Elizabeth II, as they were apparently
an eyesore. Beauty, of course, is in the eye of
the beholder, and obviously some were unable to
appreciate the inherent beauty of such a
construction. Henceforth, membership
continued to decline.
Eventually, in 1959, a plea went out to any
technically qualified, and persons, who might
make themselves available to an ailing club.
Several transmitting and receiving items were
built, and some minor items were purchased.
However, the advent of television and conse-
quently interference caused by amateur trans-
missions on nearby frequencies led to even
further diminishing activity.
Dances, and the revenue derived from them
ceased, and the advent of more modern
transmitting modes (SSB and FM), made the
Club’s equipment obsolete. For various
reasons the Club could not afford to purchase
new equipment, and interest turned to tape
recordings and music — not for transmitting.
Whilst Club activities were minimal for the
next 20 years, or so, regular meetings were still

From previous page
WICEN is a State and Nationally organised body,
but very, very few of the total VK amateur
population ever become part of it. WICEN
members spend time drilling themselves to cope
with an emergency, which they hope will never
happen — but if it does occur, they are likely to be
the last called upon to render assistance anyway.
Not exactly a role of substance! Those interested
inthird parties, a number of people carried on a
service as reciprocal arrangements exist with
certain countries. Again, only a minority are ever
likely to provide such a service, especially as
inconsequential messages ONLY are allowed.
When official approval is given, phone patching is
another resource the amateur can offer to the
public. But again, how many will provide the
facility very few!
The truth is that most VKs are only interested in
doing their own private thing. Is this attitude now
good enough? The answer is NO, if we are to gain
greater respect and recognition from the
community at large.
The word AMATEUR, in radio, is traditionally
associated with a quick willingness to assist
others but, after 60 years with a title that does little
for our status, many feel we are overdue for a
new and more dignified label. This brings us to the
nitty gritty of the whole discourse what
name?
The word EXPERIMENTER has been put
forward again. In my view it is preferable to
AMATEUR. Unfortunately it no longer realistically
describes our main activities. Three recent
suggestions are PRIVATE RADIO OPERATOR
(PRO), PRIVATE RADIO STATION or PRIVATE
RADIO SERVICE (PRS). Like the word
AMATEUR, these titles are not very precise but,
are certainly more dignified and broad enough to
allow the operator to pursue his own particular
interest, either that of community service or self
concern.
The universal need now, is to find an upgraded
title, one internationally acceptable, that does
justice and which will carry us into the 21st century
quite likely a difficult and polemic exercise. Any
other suggestions? ???
DIMENSIONS AND UNITS

Have you ever wondered whether an equation you were using was correct? Or tried to distinguish between different versions of what should have been the same equation? Or even tried to remember an equation when you’ve lent your reference books to a friend studying for their licence?

There is a method, using what are known as “dimensions”, which is of help in all these cases.

All physical quantities have dimensions. The four basic dimensions are mass, written [M], length [L], time [T], and charge [Q]. The dimensions of physical quantities can usually be expressed in terms of these four basic dimensions. If they cannot, they are said to be dimensionless.

Dimensions can sometimes be deduced from units but should not be confused with them. Thus, area has dimensions of length times length, ie [L] x [L] or [L²] regardless of the units used to measure area. The units of area are usually metres² but could equally well be feet² or miles². Velocity always has dimensions length/time [L][T]⁻¹ but may variously be measured in units of metres/second, feet/second, miles/hour, etc. Frequency is usually measured in units of Hertz (cycles/second) and has dimensions [ ]/T, ie [T⁻¹]. Note that cycles is a dimensionless quantity and is written [ ]. It cannot be expressed in terms of the four basic dimensions.

Thus, being dimensionless does not preclude a quantity from having units. As we have seen, cycles has units, ie cycles, but no dimensions. Similarly, if we remember that there are $2\pi$ radians/cycle, the constant $2\pi$ can have units rads/cycle, but again no dimensions because radians and cycles have no dimensions.

The accompanying table shows, for some commonly used quantities, the dimensions and their SI units. Some may not be intuitively obvious, but a little practice using dimensions will show they are correct. At the end of this article the dimensions of capacitance are deduced to show the rationale behind it all.

All physical equations of general applicability must be dimensionally consistent. This means that the dimensions on the left hand side of an equation must be the same as those on the right hand side. Consider the equation

$$\text{stalwarts} \times \text{old gear} = \text{new equipment} + \text{modern electronics}$$

Thus, the equation must be the same as those on the right hand side. Consider the equation $G = \frac{F \cdot m}{L^2}$.

This brief history, especially the early parts, has been extracted from the history books belonging to the Club. The full documentation, next year, will include newspaper reports and photographs.

The Victorian Railways Institute Wireless Club would like to congratulate the WIA, the oldest radio society in the world, on reaching its 75th birthday, but we are not too much younger.

If any reader has any historic data, recollections, or memorabilia with the Club in its early years, evidence in the form of a letter would be appreciated for possible inclusion in the 60 year history publication. If you can help, please contact the writer at the above address or write to Room 118, Flinders Street Station Building, 223 Flinders Street, Melbourne, Vic. 3000.

Greg Baker L20282
Half Moon Road, Mongarlowe, NSW. 2622
f = c/λ
where f is frequency (units: Hertz),
c is the speed of an electromagnetic wave in free space (metres/second),
λ is wavelength (metres).

Now, f has dimensions [T⁻¹], c has dimensions [LT⁻¹] and λ has dimensions [L]. To be dimensionally consistent c/λ must have the same dimensions as f. The dimensions of c/λ are [LT⁻¹][L] or [T⁻¹] which is the same as f. Hence the equation is consistent.

Note that when multiplying (or dividing) dimensions the normal rules for manipulating algebraic symbols apply. Thus, [M] x [M] = [M²]. However, adding a length to a length (or subtracting a length from a length) always gives us a length, so [L] + [L] = [L], and similarly with the other dimensions. These rules are used extensively in what follows and come naturally with a bit of practice.

There are several ways that amateur radio operators can use this information. One is, as a check when deriving equations. As times goes by we need more and more to use equations which we have not derived ourselves, perhaps cannot derive ourselves. We need to accept other people’s equations on faith. However, using this method we can make an elementary test of validity as well as get a better insight into the underlying physical principles.

For example, suppose we wanted to use the equation
X = 2fL
where X is inductive reactance ([ML²Q²]), f is frequency ([T⁻¹].Hertz), and L is inductance ([ML²Q²]), henry). Dimensions on the right hand side, remembering that 2 is dimensionless, are

[T⁻¹][ML²Q²] = [ML²Q²]

which are the dimensions of reactance. Hence the equation is dimensionally consistent. While this does not tell us that the equation is correct, it does tell us that it is not incorrect.

Again, suppose we wanted to use the equation
P = EP
where P is power ([ML²T⁻²]), watts), E is voltage ([ML²T⁻²]), volts), and R is resistance ([ML²T⁻²]), ohms). Dimensions on the right hand side, remembering that [L²][T⁻²] = [ML²T⁻²] and [ML²Q²] which are not the dimensions of power. The equation is not dimensionally consistent and hence is not correct. It should not be used, unless you have carefully checked it and have good reasons. While it is true on occasion that dimensionally inconsistent equations are of use, they will be experimentally derived and will have a limited range of applicability. In these cases you should make yourself aware of the limitations and stay within them.

This approach can also be useful in distinguishing between variants of the one equation. Recently a VK2 friend drew my attention to an article with the two equations:

\[ h = \frac{\lambda}{4} \left(1 + 20\text{ND}^2\right)^{\frac{1}{2}} \frac{D}{(\lambda/2)^{1/2}} \]
\[ h = \frac{\lambda}{4} \left(1 + 20\text{ND}^2\right)^{\frac{1}{2}} \frac{D}{\lambda} \]

There was no precise definition of the symbols, but it seemed that h was the height of a helical antenna, D the diameter of the helix, N the number of turns per unit length and λ was not specified at all but was presumably wavelength. Which formula, if either, is the one to use? One way to find out is to check for dimensionally consistent versions of the two equations. D, L N [LT⁻¹] and λ L. The first equation has three dimensions, showing both sides of the equation.

\[ [L] = \left[1 + \left(1 + \left[1 \right] \right) \right]^{1/2} \]

There are two things to be said. One is that this equation cannot be dimensionally consistent unless we assume the constant “1” has dimensions [L²]. This is because we can only add like dimensions to like dimensions. If the “1” is a dimensionless constant, the equation is asking us to do something akin to adding apples to oranges. My approach here would not be to assume the “1” has dimensions [L²] but to try to check further. The other thing to say is that even if the “1” was confirmed as a derived constant with dimension [L], while it could be, the equation is still not dimensionally consistent because we get on the right hand side

\[ [L] \left[1 + \left[1 \right] \right]^{1/2} = \left[1 \right] \]

which are not the dimensions of h. What of the other equation? It has dimensions [L] = \[1 + \left[1 \right] \] = \[L\]

since 1 raised to any power is 1. Then, making the more reasonable assumption that “1” has dimensions [L] we get [L] = [L]. This equation is thus dimensionally consistent and is the equation we should use, assuming the other to be the result of a typographical error.

Thus we have a quick way to tell whether or not an equation is incorrect. This knowledge can be useful reassurance before cutting expensive co-axial cable, or soldering expensive equipment together to do anything of the other countless tasks based on calculations from equations.

Another way you can use these ideas is to jog your memory when away from your reference books. For example, suppose you want the equation for the resonant frequency of an LC circuit and remember it has something to do with the inductance L and the capacitance C. The dimensions of L are [LT⁻¹], L are [ML²Q²] and C are [M⁻¹L⁻²T⁻²]. Since there is no obvious way to add any combination of L and C, the equation you want will probably be of the form

\[ f = \omega LC \]

where a, b and d are constants. We want b and d such that [T⁻¹] = [ML²Q²] = [ML²Q²] and [ML²Q²] and [ML²Q²] are the same.

Since there are no M, L, or Q dimensions on the left hand side, we must choose b and d such that these all vanish from the right hand side. Equating b = d achieves this, since any quantity raised to the power 0 becomes dimensionless, eq [M²] = [L³T⁻²] = [L³T⁻²] = [L³T⁻²].

We now have [T⁻¹] = [T²]. Hence 2d = -1, that is d = -1/2, and of course b = 1/2 as well. Putting these back into the formula we started with,

\[ f = \omega \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{LC}} \]

At this stage you might recognise the equation, and remember that a = 1/2 and f = 1/2\sqrt{LC}. If you don’t remember that a = 1/2 you are stuck because the method cannot help with dimensionless constants.

So all right you say. I may not remember that C has dimensions [M⁻¹L²T⁻²Q²] Can it be deduced?

Remember first that capacitance is charge per volt, i.e. \(C = \frac{Q}{V}\). Intuitively we know this is true because if we were to experiment with a great heap of capacitors we would find that it is a constant voltage across the capacitors, the actual charge stored increases with capacitance, and (ii) for a constant charge on the capacitors, the capacitance decreases if we need a higher voltage across the capacitor to maintain that fixed charge. Now you can see the amount of work needed to be done moving a unit charge through an electric field. ie voltage = work/charge.

What is work, or more particularly, what are the dimensions of work? You should remember from your schooldays that work = force x distance, and that acceleration has dimensions length/time/time = [LT⁻²]. Bringing all this together, the dimensions of force are [M] x [LT⁻²] = [ML²T⁻²], so of work therefore are [ML²T⁻²] and thus of voltage and of capacitance [ML²T⁻²/Q] = [M⁻¹L²T⁻²Q⁻¹]. This then leads on to capacitance (charge/volt) as \[\text{[C]} = \frac{[Q]}{[ML²T⁻²]} = [M⁻¹L²T⁻²Q⁻²] \text{as required.} \]

That may look easy but it takes practice. You may not always get an answer without rushing for a reference book, but it’s a lot of fun trying (yes. I am all right) and you will gain insights into the fundamental principles involved.

So there it is, a useful tool to help check on equations we use and in the less than panacea but it is another tool to use to come to grips with technical information.

This is an exercise you might like to see whether the equations

P = EI
where P is power (watts), E is voltage (volts) and I is current (amps), and C = IE/F
where C is capacitance (farads), I is current (amps), F is time (seconds) and E is voltage (volts) are dimensionally consistent. You might also try to derive the equation for the time constant of an RL circuit knowing R and L are both involved.

**DIMENSIONS AND UNITS OF SOME COMMONLY USED QUANTITIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Symbol</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacitance</td>
<td>C</td>
<td>Farad (F)</td>
</tr>
<tr>
<td>Current</td>
<td>I</td>
<td>Ampere (A)</td>
</tr>
<tr>
<td>Electric potential</td>
<td>E</td>
<td>Volt (V)</td>
</tr>
<tr>
<td>Energy</td>
<td>W</td>
<td>Joule (J)</td>
</tr>
<tr>
<td>Frequency</td>
<td>f</td>
<td>Hertz (Hz)</td>
</tr>
<tr>
<td>Inductance</td>
<td>L</td>
<td>Henry (H)</td>
</tr>
<tr>
<td>Permeability</td>
<td>( \mu )</td>
<td>Henry/metre</td>
</tr>
<tr>
<td>Permittivity</td>
<td>( \varepsilon )</td>
<td>Farad/metre</td>
</tr>
<tr>
<td>Power</td>
<td>P</td>
<td>Watt (W)</td>
</tr>
<tr>
<td>Resistance, reactance</td>
<td>R</td>
<td>Ohm (Ω)</td>
</tr>
<tr>
<td>Wavelength</td>
<td>L</td>
<td>Metre (m)</td>
</tr>
</tbody>
</table>

**OH HUMI!**

The world’s first traffic lights exploded near Parliament Square, London on 2nd January 1868. The lights had been erected for the benefit of Members of Parliament to be able to get to the House of Commons, but when a policeman threw the switch to turn them on, up they went!}

Courtesy Angela Laurence
In the early days of FM the detector or “discriminator” consisted of an IF transformer with several tuned windings, a couple of diodes, and a few other components. Depending on the arrangement, the circuit was known as a Foster-Seeley discriminator, a ratio detector, perhaps a slope detector. In more recent times we have seen the evolution of a wide range of integrated circuits which contain an FM detector, usually preceded by amplifiers which may provide all the IF gain the receiver needs.

Most of these ICs are intended for use as TV sound IF systems at 4.5 or 5.5 MHz, or for broadcast FM receivers at their 10.7 MHz IF. Some, such as the CA3085E, are aimed also at the communications market and include muting circuits and outputs for signal level indicators.

On their own, none of these devices can detect FM! Essentially they respond to phase or amplitude changes with respect to the central carrier frequency, and such changes do not occur unless the circuit includes some kind of frequency sensitive element, commonly called a quadrature coil. To produce an undistorted audio output corresponding to the modulating signal, this element should have some parameter which varies in linear relationship to the frequency as it deviates over the occupied bandwidth.

**REACTANCE**

One such parameter is the reactance of a parallel-resonant tuned circuit. The reactance and resistance components which comprise the impedance of a parallel-resonant circuit are shown plotted against frequency in the figure, which is called a “universal selectivity curve”.

At the resonant frequency the reactance is zero and the resistance shows the familiar peak. At a frequency below resonance the reactance has a positive (inductive) peak, while at the same frequency difference above resonance there is a negative (capacitive) peak. The region between these peaks is almost a straight line, particularly the portion symmetrical about the centre but not too close to either peak.

To be more quantitative, the reactance peaks are exactly half the resistance at either peak.

The resonant frequency is defined by

\[ f_r = \frac{1}{2\pi\sqrt{LC}} \]

and \( Q \) is the quality factor of the circuit, i.e. the ratio of reactance to series loss resistance \( r \).

Most commonly one sees \( Q \) given as \( 2\pi f_r/L \), but it may equally well be expressed in terms of capacitive reactance and parallel loss resistance \( R \) by \( Q = \pi f_r/RC \).

The reactance curve is essentially linear for values of a between about 0.3, i.e. for linearity \( Qf_r/\Delta f \) should not exceed about 0.3. If then we define the optimum \( Q \) for an FM detector circuit to be that giving maximum output consistent with acceptably low distortion we have:

\[ Q_{\text{opt}}f_r/\Delta f = 0.3 \quad \text{or} \quad Q_{\text{opt}} = 0.3f_r/\Delta f \]

Typically, for FM broadcasting, \( f_r \) is 10.7 MHz and \( \Delta f \) is the maximum deviation) is 75 kHz, so for broadcasting

\[ Q_{\text{opt}} = \frac{0.3 \times 10700}{75} = 43 \]

**NARROW-BAND**

But for our mobile FM communication systems the peak deviation is less than one-tenth that for broadcasting. Most repeaters are adjusted to start clipping when deviation exceeds about 7 kHz. Hence the optimum \( Q \) for a communications detector would be greater than 400.

Unfortunately, when we consult the application notes for our intended FM detector IC, they show typical values of \( L \) and \( C \) for a broadcast detector, but seldom indicate how they should be changed for use on narrow band systems. They commonly specify an unloaded coil \( Q \) (\( Q_u \)) of 50, which when shunted by the internal resistance between the relevant IC terminals drops to around the necessary 40 or so.

But for communications we want a loaded \( Q \) of 400 or more. We can't get it! No practical coil is that good. We can use a crystal, but then we may find the bandwidth is too narrow and have to experiment further. Besides, crystals are much more expensive than coils and capacitors, so the best we can do is to use a reasonably high \( Q \) circuit having \( LC \) such that the coil will not be too heavily loaded by the IC resistance. This can be determined as follows:

\[ Q = \sqrt{\frac{\Delta f}{2f_r}} \]

\[ f_r = \frac{1}{2\pi\sqrt{LC}} \]

\[ f_r = \frac{1}{2\pi\sqrt{LC}} \]

For a given coil and capacitors, \( Q \) may be adjusted before that \( Q = 2\pi f_r/\Delta f \).

If \( R \) is not only the parallel loss resistance of the coil, but also includes the IC resistance, this will give the working or loaded \( Q \). A reasonable compromise is that \( R_{ic} = \frac{2}{Q} \) where \( R_{ic} \) is the coil's own parallel loss resistance. So the effective parallel resistance becomes \( R_{ic}/Q \).

\[ \text{Now } Q = \frac{Q_u}{2\pi f_r} = \frac{R_{ic}}{2} \]

So \[ \frac{Q_u}{2\pi f_r} = \frac{R_{ic}}{2} \]

\[ \frac{Q_u}{2\pi f_r} = \frac{R_{ic}}{2} \]

\[ \frac{Q_u}{2\pi f_r} = \frac{R_{ic}}{2} \]

This will then give an effective \( Q \) of \( \frac{3}{4} \) the coil unloaded \( Q \). For the usual type of slug-tuned coil at 10.7 MHz a \( Q \) of 100 is a reasonable expectation, but what is \( R_{ic} \)? A figure of 3K is given in the data sheets for the LM332 and LM334, but for other IC types such as the CA3065, 3075, 3089 and 3189 it may be inferred from other data to be about 6K. For these more widely-used types we may therefore calculate that at 10.7 MHz

\[ R_{ic} = \frac{100 \times 10^3}{10.7 \times 6} = 500 \text{ pF (approx)} \]

And the inductance to resonate with this at 10.7 MHz works out to be about 0.44 microhenries.

**COIL DESIGN**

For a “home-brew” design the most appropriate coil former is the Neosid moulded type of LC circuit. The near-closed magnetic circuit is completed by the fine-thread ferrite slug inside the former. The near-closed magnetic circuit raises the \( Q \) by reducing less turns for a given inductance, thereby reducing copper loss. There is a choice of slugs, the higher-frequency F29 or the low-frequency F16. At 10.7 MHz it makes little difference which is used.

Bases having 6 pins are part of the Neosid range. The former, as a first step, is glued into the base with a drop of epoxy cement. An iron dust ring is then slid down to the bottom of the former. The winding itself is about 9 turns of 28 AWG enamel and cotton covered wire wound by hand into a criss-cross pie formation above the ring, and held together by a drop of meted beeswax before the wire end is released. The two ends of the coil emerge over the ring, and are soldered to two of the base pins. The cup can now be fitted and the whole assembly mounted in the can and secured by bent-in tabs at the can edge.

There is just one snag. It will now be too expensive to use a crystal. The coil should be a stable high-ohm type, preferably silver mica, but most of the plastic dielectric types are acceptable. Ceramics of low enough temperature coefficient will probably be rather large in physical size but may also be used. NPO for preference, perhaps N100, but larger coefficients such as the popular N750 are not stable enough.

If you have built an FM receiver using an IC such as those mentioned, and for lack of better information used the quadrature coil specified for FM broadcast or TV sound, you have probably found it produces much less audio than desired on narrow-band FM. Try the values suggested above and hear the difference. There is just one snag. It will now be too sharp to use for a broadcast detector!

**CONCLUSIONS**

From all the foregoing we may reach three conclusions as regards an IF of 10.7 MHz:

1. The capacitive \( Q \) the loaded \( Q \) of the quadrature coil should not exceed about 40 or modulation peaks will be distorted.

2. For narrow-band FM it is impossible to achieve a \( Q \) high enough to give distortion, unless perhaps a crystal is used instead of an LC circuit.
To begin, select Auto 100,10 and enter on the first line that appears, say, a contest number, the date, signal strength, name, QTH, time, etc. You can select any number and it may be an advantage to choose other line numbers, say, 5000 for VK5 and so on. For example: 00100 VK5AHK: Your No 045 sig 58: My No 044 sig 58: 23.6.85: 0900: Karl

Using the Auto’ command, the line numbers appear automatically in any sequence as desired and as 184 characters can be stored on each line, there is ample space for log keeping, or for any other purposes such as, addresses and telephone numbers of friends and relatives. By the use of the Global Search command ‘GX’ any line of information can be retrieved instantly by asking for any character appearing on that line.

If the GX command GX/KK/ is given for instance, then any line with a ‘K’ in it will be retrieved and displayed, one at a time, as the RETURN key is pressed.

To retrieve a particular line, you must choose not one character, but two or more, such as a name or call sign, or something specific in that line. Of course, if you want to recall all the South Australian call signs, ie VK5s, then the GX command GX/VK5/VK5/ should be given and all lines of information with VK5 stations would be recalled and displayed, one at a time, as the RETURN key is pressed.

A GX command, GX/JACK/JACK/ will cause all lines of information containing ‘Jack’ to be displayed.

Figure 1 displays a dummy list of contacts, as they may appear in a contest, and printed out in selected lines using the Global Search command. The first one shows selection by name, the second by date, and the third by number. Remember, this is done on this particular computer without a programme but, by using the Global Search command facility.

The normal use of the GX command is for changing variables or characters in a programme, and the form, GX/KARL/TOM/ is used. Here Karl will be replaced with Tom as each Karl is searched for and displayed when the period ‘.’ is pressed. However, no change occurs if the RETURN only is pressed.

For our application of the GX command, the period ‘.’ is not used and therefore nothing will be lost, or changed, from the information on each line when being retrieved.

It is not necessary to enter two commands in the GX statement for our purposes, the form GX/KARL/ is sufficient to retrieve and display a line with the name Karl in it.

On a 16k Bee, about 300 to 400 lines of information can be stored before running out of memory, but it depends on the amount of information included on each line.

The information can be saved in the usual way, either with cassettes or disks, when you run out of memory space.

I am not a contest operator and do not claim that the arrangement I have given, for contest log keeping, is the best, so I leave this for the individual to judge.

Happy Contest Beelogging!
MORSE CODE ON THE VZ200

A previous article described an adaptor to operate RTTY on the VZ200 computer. The adapter has now been modified to include Morse code.

Lloyd Butler VK5BR
18 Ottawa Avenue, Panorama, SA. 5041

Expansion of the programme resident in the EPROM and minor changes to the wiring, have expanded the VZ200 RTTY adaptor to include encoding and decoding of Morse code. Morse speed can be varied over a range of approximately five to 35 words per minute. Resident messages, buffer storage and split screen operation, all used on RTTY, are also available for Morse operation.

HARDWARE CHANGES
To interface for Morse code, the 8251 USART functions DSR and DTR are used as one bit input and output ports respectively. DSR is simply wired in parallel with the existing data input (RXD). DTR is wired via a spare gate (V6-2), which is used to key the tone output from gate (U5-3). The circuit changes are illustrated in Figure 1.

For Morse code, the output tone is set at 2125Hz by the software and this can be used to feed the speech input of a transmitter. In a single side-band transmitter, CW transmission (A1) is generated and on a transmitter where carrier is not suppressed, MCM transmission (A2 or F2) is generated. Of course the latter is only permissible above 52MHz.

MORSE FORMAT
Morse format is based on the following:

- Dash = three dots length
- Space between dot or dash elements = one dot length
- Space between characters = three dots length
- Space between words = seven dots length

Speed is controlled by a selection code of one to eight and for the two lowest speeds (below 10 WPM), the spacing is increased to the following:
- Space between characters = five dots length
- Space between words = 13 dots length

There are a number of special Morse characters which are not available on the keyboard and not available as printed characters. These have been equated to available characters as follows:
- Error = asterisk (*)
- Double dash » dash (—)
- Wait = plus (+)
- Start of message = less than (<)
- End of message = equals (=)
- End of work = at (@)

Error is transmitted as six dots, instead of the standard eight, because six elements per Morse character is the maximum the system can process.

Morse characters are generated from a look-up table, one byte per character. Bits two to seven are used to store the individual elements of a character, zero representing no element or a dot and one representing a dash. Elements are justified left, with the last element sent, always in bit seven. The numeric value formed by this is added to the number of elements in the character and the sum is the value stored in the look-up table. For up to five element characters, it is an easy matter to extract the number of elements from bits zero to two and the dots and dashes elements from bits three to seven. For six element characters, there is an overlap on bit 2 and summing causes bit carry on four of these (parenthesis, comma, colon, and semi-colon). To detect these is a bit tricky. The logic is to look for a one in either bits four or five and binary 010 in bits zero to two. If this logic is satisfied, the number of elements is assumed to be six and six is subtracted from the byte value to obtain the element format in bits two to seven. Some examples of look-up table coding are shown in Figure 2.

OPERATION
Morse can be sent on line, direct from the keyboard and characters are encoded at the selected speed by the software. In this method of operation, character and word spacing are...
The combined RTTY and Morse programme package fully fills the 4k byte EPROM. A certain amount of programme trimming and rearrangement had to be carried out to fit it in. The programme is loaded in memory CO03H to CFF9H. RAM space used is 8000H to 8898H.

Based on information given by Jim Rowe in ETI, July 1985, the memory allocation should be suitable for both the VZ300 and VZ200 computers. A VZ300 has not been available to check it out, but the adaptor is expected to also work on the VZ300. There appears to be a change in clock frequency in the VZ300 from 3.580 to 3.540MHz. This will cause a shift in Baud rate and tone frequencies, but insufficient to be of significance.

CONCLUSION
The unit works very well on both RTTY and Morse code. The Morse decoder overcomes a wide variety of interference to the speed selected. The writer was surprised how well it manages to decode hand sent Morse in which timing is not precisely defined. Noise interference is reduced by feeding the input signal via the RTTY decoder filters, but it does not perform as well as the human ear in separating Morse from noise. No doubt this could be improved if frequency shift keying were used.

Morse sent from the buffer sounds copper-plate, as one would expect fully controlled by the computer. On line from the keyboard, the writer found it difficult to maintain consistent character spacing, but this is probably a matter of practice on the keyboard.

To convert a CB "Station Master" to 80 metres, you will need a piece of PVC pipe, about 10m of copper wire and a tube of Araldite.

Portable Antenna for Eighty Metres

Keith Rehe VK4KAW
7 Guardsman Avenue, Alexandra Hills, Qld. 4161

Remove the original coil by drilling out the pop rivets that hold it and then wind a new coil on the PVC pipe former.

The completed antenna resonated 1:1 on 3.545MHz and was 1.2:1 on 3.620. The radiator breaks down to about four feet (1m), and can be stored in a caravan or car boot with ease.

It can be mounted at ground level or on the car or caravan, ensuring you keep the coil clear of metal surfaces.

Technical Editor's Note:
Some adjustment of the number of turns on the coil, the tapping point, or the length of the radiator, may be needed. These will be dependent on the actual materials used to make the coil. The wire used for the coil should have a diameter in the region of 1.5mm, in order to minimise losses.
TENTERFIELD
OLD TIMER

Recently, Russell Wat: VK2WT was featured in the TENTERFIELD STAR, explaining the benefits of a lifetime hobby in amateur radio. Russell was granted a Certificate of Proficiency in Radio-Telegraphy in 1925, and over the years, has kept many ‘bits and pieces’ from the early days. He was pleased to discover he still had a valve of the type used in the radio receiver on the cover of Amateur Radio, May 1985. (See photo 1).

Russell’s QSL cards, through the years.

An early photograph of Russell’s ‘shack’. Note the batteries under the table.

Russell, aged 21, poses for the identification photograph on the back of his Certificate.

Russell’s Certificate.
This article is an insight to underground communications in a deep mine.

Mount Isa is situated in north west Queensland, at 139 degrees 30 minutes east and 20 degrees south. The city has a population of 25,500 and 32 of these are licenced radio amateurs.

The mine itself, employs 4860 people and is the biggest producer of copper in Australia and the biggest combined silver, lead, zinc mine in the world. It is also the operator of what could be the longest antenna in the world. The mine's surface area covers more than 10 square kilometres, and underground, there is over 460 kilometres of road and 200 kilometres of rail tracks.

Mount Isa mine looking north. The lease is west of the railway line, city to the right.

There are three major shafts, which convey men and supplies to the underground workings and these use high band VHF for voice communications between the cage (which carries the gear), and the winder driver, who operates the massive winding motors in the headframe. The R62 shaft main cage travels at more than 40 kph and to avoid accidents, several continuous tone oscillators monitor the failsafe mechanisms and trigger alarms or trip the drive system, in the event of a failure. Induction coils, coupled to the 44mm conductor has gaps machined out which allows some RF radiation along its entire length. This system allows both simplex and duplex two-way communication between vehicles, supervisors, haulage trains and the central train control room.

Small electric locomotives, called Mules, haul gear around the levels and their drivers use Motorola hand-helds with rubber antennas. Considering the environment and general operating conditions, the radios are amazingly forgiving. I wouldn’t expect my trusty amateur hand-held to last a full shift at the mercy of the mine. Because of severe conditions existing underground, all radios have to be virtually waterproof and withstand prolonged high temperatures and vibration, not to mention the odd falling rock.

Generally, once you travel more than 50 metres from the Radiax, very little useful reflection occurs and communications are rapidly lost. Recently, tests have been carried out using UHF hand-helds and similar radios. This is just one of the avenues which the radio section personnel are exploring.

There are three main rail haulage levels and a typical example has one control room operator and four trains, each with two 20 tonne electric locomotives and 15 trucks, hauling 250 tonnes of ore every 15 minutes. Ore discharged from the trucks flows to the crushers on level 20, 1055 metres below the surface. After primary and secondary crushing, the ore is hoisted by 30 tonne skips and conveyed to the storage bins at the surface where it is processed.

Mount Isa is actually two separate mines, one producing copper and the other lead, silver and zinc.

The mine has its own weather station, which tracks daily meteorological balloon flights. These have UHF radio Sonde equipment attached and transmit atmospheric pressure, temperature and moisture content telemetry. The balloon is tracked until it bursts at about 50,000 feet (15,250 m), which is above the tropopause and international flight paths. There are also three sulphur dioxide monitors around the city with UHF telemetry transmitters, two of which are solar powered and considered very reliable, after many years of operation. Information from these, and 10 wired monitor stations, feed a computer which provides a summary of air quality control and updates every five minutes.

By now, members can imagine the size of the annual licence renewal bill, which is in excess of $18,000!

In March 1978, the new 270 metre lead smelter stack was completed and the local amateur group drooled as they imagined what 2 metres coverage would be like from the top. The transport frequency radio was remote linked to the top of the stack but, due to limited access and lightning strikes, it is to be relocated. I believe it is the highest VHF antenna in the southern hemisphere. Unfortunately, we still cannot receive VK4RMI in Mount Isa, either.

There are more than 250 radios used on the lease including paging systems, railway marshalling, power station operation, fire, ambulance and security, plus several other small, stand-alone systems, so living with a scanner is an entertaining experience, 24 hours a day.

A radio-controlled load-haul-dump unit 'mucking out' a stope.
MORSE IN MARITIME COMMUNICATIONS

The first message transmitted over a telegraph line between Baltimore and Washington, in the United States, using Morse code, was ‘What has God wrought?’

Morse’s basic telegraph system was extremely simple, with the telegraphists opening or closing a switch (key) to send electricity from a battery along the telegraph line. The return path for the current was through the ground. At the receiving end, the pulses of current operated a pen, which marked a strip of paper, later known as ‘Ticker Tape’, when current was present.

The telegraphists found they could spell out the message just listening to the sound the pen made, and eventually the marker was replaced by a mechanism to amplify the sound. The problem was, how to use these pulses of electric current to represent the letters of the alphabet and to spell out a message.

The heart of Morse’s invention was his decision to use two different kinds of electrical pulse, one short and one long, a dot and a dash. By combining these two kinds of pulses, it was possible to represent every letter of the alphabet by a code of four pulses or less.

Morse gave the letters which were most frequently used the shortest codes. In this way, the number of pulses sent to communicate an average sentence in English, could be sent to a minimum. This is why the letter E, the most commonly used in the English language, was given a single dot.

The most common letter T got a single dash. Less common letters were made combinations of dots and dashes. Numerals and punctuation marks were made up of combinations of five or six pulses respectively. Morse also set the rules that a dash was to last as long as three dots, a space as long as one dash was to be left between different letters and a space as long as five dots was left between different words.

DIGITAL TO REPLACE MORSE IN MARITIME DISTRESS COMMUNICATIONS

Since early this century, ships have used Morse Code for Distress signals but, that will end when computer-age technology is introduced in the next decade.

The International Maritime Organisation (IMO) plans to adopt automatic digital systems. Rod Harris, a senior radio communications engineer with the Department of Transport, said it was planned to replace Morse code under a world-wide review called ‘The Future Global Maritime Distress and Safety System’.

Tentatively the new system will be fully operational in 1996, with a phase-in period beginning about 1990.

The new system basically means that someone will simply press the panic button to automatically send a distress call, including the ship’s exact position. It would no longer be necessary for the radio operator to pound a Morse key to send out SOS.

Australia’s first telegraph linked Melbourne with nearby Williamstown port in 1854. Progressively, it linked the Australian continent, east with west and Adelaide with Darwin via the overland telegraph line.

Wireless telegraphy communication with England began in 1918 ... 12 years earlier. Tasmania was linked in 1919.
linked with the mainland by wireless Morse. It took about 100 years for the teleprinter to make Morse telegraphy redundant, and its use by wireless telegraphy has been steadily declining throughout the world.

The Overseas Telecommunications Commission of Australia (OTC), closed its last Morse telegraph link, with Lord Howe Island, in 1975. Radio teleprinter, improved high frequency radio systems, and better submarine cables have all made Morse obsolete for OTC telegraph operations. However, OTC, through its coastal radio service for ships at sea, still uses the code.

Harold Jones, of Sydney Radio VIS, said that since the advent of the telex on radio had come into its own in the last decade, there has been a steady decline in Morse. He said there were a greater number of ships each year being fitted with telex, which is quicker and cheaper, and gives vessels direct contact with their offices.

Other factors leading to the reduction in Morse are better radio-telephone facilities, satellites, and also fewer ships, particularly liners, Mr Jones said.

Commenting on its future, the veteran of more than 30 years said: "It must go eventually, just how soon, I couldn't say. As satellite communication becomes cheaper and more accessible to the ships, the decline will probably happen very quickly."

Retired principal of the Marconi School of Wireless (Sydney), Cec Bardwell said the hey-day of Morse was from the early 1930s, through World War 2 and the 1940s.

Cec spent 40 years involved in teaching Morse at the school, and remembers the many areas which no longer use it.

Morse communication between railway stations ended in the early 1930s, police used it to contact their patrol cars before the war and in the post war era, police intra-state and interstate communications were in Morse, Mr Bardwell recalled.

Further reports were once gathered in Morse, and aviation communications used Morse until 1954. The Postmaster General's Department had Morse in every post office, but replaced it with teleprinters from about 1959, said Mr Bardwell.

A group of mainly former postmasters and telegraphists, called the Morsecodians, was formed in 1974 and holds annual reunions each October in Sydney. Their president, Gordon Hill said the telegram and mail were the main communications in Australia once, but that changed from the 1960s with the improvement in telephone services.

Remembering the Morse telegram days he said: "The teleprinter at the Sydney GPO handled large volumes of traffic daily and up to 400 operators, a shift, would sit by their sounders. The day Morse code test, give it up the minute their ticket arrives you will know?"

The hobby of amateur radio was certain to be the last bastion of Morse code, although it had also seen a decline in Morse due to a number of factors. A leading Morse operator was Austine Henry VK3YL, who has been on air for 55 years, almost exclusively using the code.

"It is a part of my life, and it was only in recent years that I reluctantly used a microphone," said Mrs Henry.

Morse code will hopefully always be a part of amateur radio and those in the hobby not using it were missing out on something, she said.

"Some radio amateurs, after passing a Morse code test, give it up the minute their ticket arrives in the post. I can not understand it," said Mrs Henry.

Did you know?

An amateur radio satellite, designed and built by members of the Melbourne University Astronomical Society was launched on 23rd January 1970, by NASA.

WINTERING IN THE WILDERNESS

Barry Abley VK3YXK,
61 Peter Street, Grovedale, Vic. 3216

During July and August 1985, the writer had the stimulating experience of visiting 24 National Parks, and qualified for the Keith Roget Memorial Parks Award at the same time.

The welcome advent of long service leave, and a desire to discover the natural beauty of Victoria's National Parks during this 150th year, afforded an excellent opportunity to qualify for the Keith Roget Memorial Parks Award.

The advantage of undertaking a challenge to visit 20 National Parks during the Winter months of July and August, is an opportunity to appreciate the immense variety of flora and fauna available to the visitor, during a season of serenity. The solitude enables the observer to catch a glimpse of nervous marsupials or timid birds, like the Lyre Bird. An early morning walk can be particularly fruitful when, on occasions, you have the whole mountain to yourself.

Winter in Victoria offers periods of mild weather, extending from a few days, to a week. The arrival of a High Pressure Cell will result in fine days, crisp mornings and cold nights. During early August, while visiting many beautiful parks in Gippsland, skies were clear and the days perfect without flies.

The tremendous variety of scenery and animal life available is only surpassed by the diversity of conditions which face the amateur operator, determined to gain contacts on two metres FM. The proliferation of well sited repeaters makes the task of logging contacts, during a mid-week visit to a National Park, a much easier proposition, than would be the case if simplex contacts only were permitted.

By using a FT480R transceiver and a five element beam, on a four metre mast, a surprising number of repeaters were able to be accessed from points in all areas of the State. Of the 24 National Parks visited, 22 were in locations from which repeaters were accessible.

I am indebted to amateurs in more remote locations, who went out of their way to arrange schedules, which enabled me to activate parks and gain points for the Award. It would not have been possible to work from Croajingolong, Lind, Alfred and Lower Glenelg Parks without the co-operation of Alan VK3AGK, at Orbost, Lindsay VK3ANJ, at Lakes Entrance and Doug VK5AJR, at Penola, SA. A great deal of satisfaction was gained by being able to access the Warrnambool Repeater, VK3RWH, using a FT207R hand-held, from the summits of Mounts Eccles and William, during the first week of operation of the repeater in its permanent site. The Keith Roget Award encourages the amateur operator to enjoy the delights and uncertainties of portable operation, and at the same time, appreciate the scenic beauty of Australia's parks. This

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S denotes Sealed Road . . . G denotes Gravel Road

Some of the gear used on the NP Expedition.

variety is reflected in the contrast of Victoria's National Parks, and range from the rugged coastline of Port Campbell N P, the fern lined forest gullies of Tarra Valley, Bulga and Lind N Ps, to the open Mallee plains and river red gums of Wyperfeld and Hattah-Kulkyne.

I thank the late Keith Roget for the inspiration of this award, and encourage other amateurs to combine the pleasures of our rewarding obsession with some of Australia's beautiful places.

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**SIMPLE ADD-ON TUNING INDICATOR FOR SEQTG DEMODULATOR**

D C Hunter VK4ADC
South East Queensland Teletype Group
PO Box 184, Fortitude Valley, Qld. 4006

Since the introduction of the SEQTG TG170D demodulator PCB, in about 1980, some 300 boards have been sold throughout Australia and the Pacific. In the original design, the tuning indicator was in the form of a meter, which gave a steady indication when the receiver was correctly tuned to the incoming RTTY signal. The circuit described in this article allows the inclusion of two LEDs to make the tuning even easier.

![Diagram](image)

One LED driver circuit is fed from the output of the mark channel bandpass filter in the demodulator, while another is, in turn, fed from the space channel. The audio signal from each channel is then led to the respective peak envelope detectors and the resultant DC is used to vary the forward base bias current of the respective transistors. A LED, in series with a current limiting resistor, is then connected between the positive supply rail of the demodulator and the collector of each transistor.

No retuning of the demodulator is normally required after connection of the circuit to the final mark and space test points, however a quick tuning check is desirable. As the LED driver circuit is linear, the advantage of its level sensitivity can be utilised by reducing the mark or space audio tone level to the point where the particular channel LED is just glowing quickly.

The three bandpass trimpots can then be tuned for optimum response as indicated by the LED.

Since layout is reasonably non-critical, the construction is left to the individual, although veroboard or a PCB is recommended. Transistor types and component values can be changed to suit your spare parts supply, but within normal selection tolerances, as this design is relatively non-critical.

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*AMATEUR RADIO, January 1986-Page 25*
International News

IARU MEMBERS MEET IN MELBOURNE
Member societies of the IARU met in Melbourne, prior to attending the WIA's 75th Anniversary Dinner, for discussions about the forthcoming Sixth Conference of the IARU Region 3 Association in Auckland, NZ.

NEW MEMBERS
The Brunei Amateur Radio Transmitting Society (BARTS) was elected to the membership of the IARU, in July 1985. Also, the Amateur Radio Club of Tonga (ARCOT) has submitted an application for membership, so it is anticipated they will become the 24th Member of the IARU, Region III.

REUSING OLD CALLS
Amateur stations in Japan have made such a rapid and large growth that statistics published in September 1985 state the number of stations as over 600,000.

Owing to this trend, authorities were concerned that they would run out of call signs with the prefixes JA-JS, allocated by the ITU for the JA1 area, which is situated in and around Tokyo.

To cope with the shortage, the authorities have decided to assign call signs, once issued but now abandoned, to new stations. The new ruling came into effect in October 1985. It will now be that prefixes JE-JS will be used and the suffixes will be a combination of three alphabetical letters. Call signs with two letter prefixes will no longer be used.

Stations in Ogasawara and Minami-Torishima islands will retain their old prefixes.

From Region 3 News - October 1985.

LATITUDE AND LONGITUDE FROM A STREET DIRECTORY
Noel Lavelle VK3ABH
4 Wembley Court, Forest Hill, Vic. 3131

Now that the Melway's Street Directory for Greater Melbourne includes the 1km Australian Map Grid (AMG), it seemed that a simple programme could convert AMG co-ordinates to latitude and longitude with a fair degree of accuracy. AMG information appears on page 14 of the directory. The listing shown in this article is for a Sharp PC1200 (Tandy TRS-80, Model PC1), Pocket Computer. Few small computers have the number crunching capability of this particular device, which has been a most useful tool in the shack, and elsewhere, for half a decade.

The programme is so simple that little comment is necessary — the memory allocation shows what is where.

Initialisation is mainly concerned with formatting the output to suit the 16 character per line printer, or the inbuilt 24 character liquid crystal display (LCD).

Data entry and selection of the appropriate vertical and horizontal co-ordinates, and the mean convergence angle between True North and AMG from the data array follow.

The DIM statement is not available in PC1 Basic and specific addressing of the three-way "two-dimensional" arrays is hard to read. The

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more cumbersome sub-routine method was used to provide better readability and, if desired, direct conversion to standard arrays.

If single step conversion of decimal degrees to degrees, minutes and seconds is not available on your processor, delete DMS, X and the outer brackets from both expressions at line 320 and add the appropriate instructions to perform the conversion, or leave the result as decimal degrees if it suits your purpose.

The grid data table was compiled from the current issue of 1:100,000 series Survey Maps of Australia Geodetic Datum 1966. Other maps could give numerical values for latitudes and longitudes, which differ by up to four or five seconds, or so.

The test data for nominal five minute intersections was included to enable programme checking.

For the area covered, one second of latitude is approximately equal to 30.8m, and one second of longitude varies from about 24.2 to about 24.5m.

Users of pocket computers of the types mentioned should note that it is impossible to load the programme as it is listed. Omitting all remarks will leave the basic programme to exactly fill the available programmable memory. (MEM shows 0 steps 0 memories).

The remarks were appended by listing the programme in two parts.
AMATEUR RADIO CROSSES THE NULLARBOR

A chance QSO with Graham Prince VK5BGR, an employee of Australian National, concerning the possibility of working amateur radio on the Trans-Australian, led to further negotiations taking place with a public Relations Officer of Australian National. Immediate acceptance for a planned railway trip was given. In all, the initiation and completion of the promotional journey took less than three weeks to organise.

The amateur group departed Keswick Main Terminal on 11th September, arrived Perth on 13th, and returned to Adelaide in the evening of 16th. Accommodation was a Wegner First Class Coach, provided by Australian National, who also handled media coverage in Adelaide whilst Westrail covered the Perth end of the historic journey.

AND SO TO MAKE IT WORK

The SA Division's Jubilee 150 Task Force were responsible for suitable antennas, equipment, and display material to highlight the radio activity.

On Preparation Day, Saturday, 7th September, a variety of antenna systems were assembled. The antennas consisted of a 25 metre long wire, end led to a TS820S, for 80 and 20 metre work, a 40 metre Hustler, linked to a TS820S, was attached to the passenger entrance hand rail, and extended above the roof of the mobile coach. A 40 metre whip was fixed directly opposite the Hustler on another hand rail. A TR2500 hand-held with base power supply and a Kyokuto FM, with homebrew scanner and 60 watt amplifier maintained 2 metre communications from a quarter wave wire was suspended at this height with 10 clearance under bridges and tunnels, the open roof of the Wegman Coach, adjusting the long wire at each end of the coach.

With preparations complete, the last job before departure was to ‘dress-up’ the mobile home internally, and externally, with promotional material to identify, "Amateur Radio, Live Across the Nullarbor", and to highlight the historical significance of the expedition. Block letters 229mm high on signs almost the length of one side of the 25m coach said it all: “SA Amateurs — World Communications with Australian National — Across the Nullarbor" and 305mm letters detailing the call signs VI5JSA and VK5JSA.

Due to turn arounds at Port Pirie and Kalgoorlie of the twin diesel hauler, particular attention was given to lighting up the passenger platform side of the train at ports of call. Inside the comfortable 15 berth carriage, corridor and operating locations, colourful posters completed the story of the SA Division’s involvement in the activity.

The entourage, once on the rails, resembled something not unlike a mobile amateur flying flagship coach, with an antenna clothesline locked into the huge Trans Australian Nullarbor convoy. Travelling at speeds of up to 110km per hour, it was indeed an exciting adventure for the three amateurs, plus the two Australian National employed amateurs on board.

REASONS AND OBJECTIVES

The main aim was to promote Australian National by making Australian and world wide radio contacts. This was done to the tune of in excess of 500 logged contacts.

The trip also provided the group with the opportunity to make some mention of Jubilee 150 activities for South Australia in 1986, the America’s Cup in Western Australia in 1987, and the Grand Prix for Adelaide in November 1985.

EXPERIMENTATION

Whilst there will be abundant, well documented evidence to suggest that many of these aims and objectives were met by the group, the trip also provided a golden opportunity to experiment with antenna systems, reaffirm amateur links between the SA and WA Divisions of the Institute, and to promote goodwill by way of radio exchanges with Australia and the world.

Because of the peculiar location of working railway communications, the choice was made

BELOW:

The following is a report of a historical Railway Mobile DX-Pedition on the Trans-Australian, across the Nullarbor Plain. The round trip of 5320km from Adelaide to Perth, and return, occupied rail-time of five days travelling.

Rod Durbridge of the South Coast ARC, on the roof of the Wegman Coach, adjusting the long wire antenna.

BELOW:

Ready to go. (From left) Alan VK5ZN, Bob VK5BJA, Peter Koen, Graham VK5AQZ, Rowland VK5OU.

BELOW:

Graham Horlin-Smith VK5AQZ
2 Athol Avenue, Tranmere, SA. 5073

Graham Horlin-Smith VK5AQZ
2 Athol Avenue, Tranmere, SA. 5073

Graham Horlin-Smith VK5AQZ
2 Athol Avenue, Tranmere, SA. 5073

Graham Horlin-Smith VK5AQZ
2 Athol Avenue, Tranmere, SA. 5073

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At Port Augusta, local residents Ron VK5AP and Peter VK5BWH visited the train. (From left) Ron, Peter, Graham VK5AQZ, Alan VK5ZN and Peter Koen.

to work strictly barefoot operations. The dangers of using a high-powered linear may have caused problems like loading the antennas, which, at the best of times, may not have been totally efficient systems.

Links were reaffirmed with the amateur populace along the way, in particular with the Goldfields ARC in Kalgoorlie. Platform cheering, waving, banner flying, generous words of welcome, and presentation exchanges made the meeting and link all the more worthwhile.

The many logged contacts were confirmed, railway mobile two-way QSOs, on the Jubilee 150 special souvenir QSL cards. Later, confirmations of the V75A call sign, activated for about 24 hours of the return trip, will be sent. Propagation and band conditions were not brilliant, but it just meant the group had to work a little harder for the contacts.

Graham VK5AQZ, operates two metres through the Bluff Repeater, Port Pirie.

**SUCCESSFUL JOURNEY**

The attention and interest shown by passengers and visitors to the operation, the keeping of a visitors book, and the many requests for Peter Koen’s special silk-screened wall poster made for a pleasurable engagement with the people along the way. Peter also made good use of video and camera equipment to provide a record of the trip for the future. The group also added to the limited communications aboard the train, as they are.

At Port Augusta, local residents Ron VK5AP and Peter VK5BWH visited the train. (From left) Ron, Peter, Graham VK5AQZ, Alan VK5ZN and Peter Koen.

limited, particularly between Port Augusta and Kalgoorlie, save for emergency telephone placements strategically along the tracks.

Media coverage was exceptional, thanks to press releases by Australian National. Local radio stations, SDN and SAFM ran news clips, as did television channels 9 and 10 in South Australia, also Channel 9 in New South Wales. The group were also interviewed for the VK6 WIA Sunday Broadcast by Douglas VK6ZMG and Sue VK5JU.

A special interview, with Bob Burns of 5DN, was made in a special amateur to amateur hookup. Bob was in the shack of VK5BHA and interviewed the group as they were mobilising over the SA/WA border. Parts of the interview were played on the following two mornings breakfast show. Overall, the trip was a resounding success.

**SOME CONTACTS OF NOTE**

Douglas VK6ZMG, VK6 WIA Broadcast Officer; Bob VK5BHA, with Bob Burns, DJ with 5DN, as second operator; Bill VK6AG, first QSL — hand-delivered to Perth Terminal; Ken VK9GA — first postal QSL; Don VK5ADD, SA Councillor and JOTA Co-Organiser; Trevor VK6CI — worst RST (2x1); Peter VK5BWH, and Ron VK5AP — eyeball QSO at Port Augusta; Ron VK5RV, at Rawlinna Crossing, 1036km from Perth, waving his two metre hand-held; Jerry VK3CK - second worst RST (2x4); Chuck VK6CF — big RST; Bill VK6ZX — rail mobile entrepreneur; Ray VK6ET and the Goldfields ARC, Kalgoorlie; Bob VK5BHA — most technical/production calls.

The Train Examiner, Mr Henry Cox checks the TS93X.

**ELEVENTH-HOUR BID TO KEEP GREENWICH TICKING**

Keepers of Greenwich Mean Time plan to let their clocks run a little faster than normal through the winter, which will delay programmes to South Australia and Queensland, in their respective local times.

The operation of the new delay system coincided with the onset of Daylight Saving. From 27th October, the SBS-TV system has allowed the network to direct programmes from its Sydney studios to South Australia and Queensland, in their respective local times.

The system, manufactured by the Sony Corporation of Japan, is a result of extensive research to develop an efficient method of transmitting networked television programmes across Australia.

**NEW TIME DELAY**

SBS-TV has unveiled an advanced new programme time delay system which will allow the network to transmit material to four different local time zones across Australia — the first system of its kind in the world.

From 27th October, the SBS-TV system has allowed the network to direct programmes from its Sydney studios to South Australia and Queensland, in their respective local times.

The operation of the new delay system coincided with the onset of Daylight Saving. From 27th October, South Australia is still 30 minutes behind Eastern Standard Time, while Queensland’s non-adjustment to DST has placed them one hour behind.

The system will also come into operation in Perth, when SBS-TV begins operation there early this year. Perth is three hours behind DST.

The system, manufactured by the Sony Corporation of Japan, is a result of extensive research to develop an efficient method of transmitting networked television programmes across Australia.

The time delay equipment is divided into three areas. The heart of the system is in the network's Milsons Point studios, Sydney. The two other systems are located in Melbourne and Perth, delaying programmes to South Australia and Western Australia, respectively, and consists of 23 video tape machines, and six unique delay system controllers. This new system will allow SBS-TV to feed its material to all markets at the same local time, is ‘World News’ at 7.00pm in all areas.

By automatically holding programmes for the necessary period, viewers in the different interstate time zones will be unaware that the material they are viewing is being delayed in any form.
AUSTRALIAN RADIO JOURNALS BEFORE 1939 — A SURVEY

At least one Australian radio firm ran a staff magazine during the 1920s. AWA in Sydney published THE RADIOGRAM from about 1928. It was a scaled-down equivalent of the American BELL LABORATORIES RECORD, containing social and general technical information on their corporate activities. Today, with much of AWA's early official records lost or discarded, it is an important guide to the experimental work of a major local manufacturer.

A journal, which I know only from lists of magazines for sale from Homecrafts, is the AUSTRALASIAN WIRELESS REVIEW, published about 1925. Does anybody know what this journal contained? I assume that it was Sydney-based, as no copies are held in the State Library of Victoria.

From about the start of 1930, Ossie Mingay in Sydney, published the RADIO AND ELECTRICAL MERCHANT, later the RADIO RETAILER OF AUSTRALIA, as a professional weekly trade paper. While not relating directly to amateur activities, it contains much detail of the personal and professional lives of many prominent amateur operators. It also contains a host of facts and figures pertaining to communications, broadcasting and electronic hardware. Mingay's publishing company, Australian Radio Publications Limited of Sydney became very active in promoting local trade journals and annuals.

From the historian's point of view, the most important of these is the RADIO TRADE ANNUAL OF AUSTRALIA, published yearly from 1933 until at least 1942. This is an indispensable compendium of radio facts and figures, including such key items as Annual Reports of the ABC, popular receiver circuit designs, directories of radio importers and manufacturers throughout Australia, and a 'who's who' of radio trade and engineering figures. It was sometimes known as the RADIOTRON TRADE ANNUAL. From 1935, they also published the BROADCASTING BUSINESS YEAR BOOK, providing an inside view of facts and figures on Australian and New Zealand (commercial) radio broadcasting.

Radio journals proliferated around Australia during the 1930s, and many of them were listed regularly in the RADIO TRADE ANNUAL OF AUSTRALIA:

"AUSTRALASIAN RADIO WORLD (Sydney), published monthly from May 1936 until about 1951. A technical journal in similar vein to the present ELECTRONICS AUSTRALIA, containing frequent articles on aspects of amateur radio and short wave radio.

"SHORT WAVE RADIO NEWS (Sydney), a specialist - interest magazine, of which only a few monthly copies from 1936 are held in the State Library of Victoria.

"RADIO REVIEW (Sydney, early 1931), later TELEVISION AND RADIO REVIEW (from October 1931), later again the RADIO REVIEW OF AUSTRALIA. A monthly technical journal incorporating the early proceedings of the Australian IRE.

"AUSTRALIAN RADIO NEWS (Sydney, from 1933), monthly programme and technical journal published by the BULLETIN.

To place this in perspective, these journals survived in the face of competition from over 100 British and American radio journals like WIRELESS WORLD and RADIO NEWS. This is a true indication of extreme public interest.

Some of the more professional radio magazines, not intended for public sale, should also be mentioned for the sake of completeness. Various branches and associations within the PMG's Department published journals during the 1930s. Among the expected papers on telephone technology, the occasional radio article pops up. Some of the best papers were published by the members of the PMG Research Laboratories, which were at 59 Little Collins Street, Melbourne, in those days. All technical equipment for the Australian Broadcasting Commission had to be tested by them prior to installation, and their tests were published in many cases. Some of them appeared in the TELECOMMUNICATION JOURNAL OF AUSTRALIA, a rather formal journal established in 1935 with covers of blue cartridge paper, not unlike a thin version of the early Bell Systems Technical Journal, which...
FINED FOR RADIO INFRINGEMENTS

Many amateurs will be aware of the Department's efforts to curb interference on the airwaves. Following is an account, released by Graeme Barrow, Director of Public Relations, of a recent Court Action in Adelaide, which indicates the penalties that can be imposed as a result of illegal use of radio equipment, or licence breaches.

A South Australian man, who made the Adelaide CB radio repeater useless for operation by hundreds of other licensees, was fined the maximum of $40 in the Magistrate's Court, and had a $300 transceiver forfeited to the Department of Communications.

Before the Court was Michael Plaszynz, of Mile End. He was prosecuted under Regulation 12(1) of the Wireless Telegraphy Regulations for breach of the conditions of his CB radio station licence.

Evidence was given that on 29th March 1985, Departmental Officers traced Plaszynz to a site at Mount Gawler where he was found to be making what the Department considered to be unnecessary and unauthorised transmissions on the Adelaide CB radio repeater.

Plaszynz was continuously pressing his transmit button, and holding the microphone to the speaker of a cassette tape recorder, resulting in the continuous broadcast of music.

It was stated that the Department had received numerous complaints of such disruptions over the period leading up to his apprehension.

In addition to the penalties listed above, Plaszynz was ordered to pay $17 court costs, and $150 towards the cost of the Department's investigation.

QSP

NEW TELEPHONE NUMBERS

Every telephone in France had its telephone number changed at the same time, recently. The move saw the conclusion of the use of Area Codes — all 24 million telephones now have eight-digit numbers.

About 22,000 technicians were used for the dial-to-dial switch conversion, which doubled the possible digit-combinations available for phone numbers.

The number system had become saturated, leading to inefficiency and delays in phone connections.

AMATEUR RADIO, January 1966-Page 31
FIVE YEAR INDEX — OF TECHNICAL ARTICLES

YEAR | MONTH | PAGE | TITLE | MONTH | PAGE | TITLE


1985 | Sep | 34 | FM Television — A Better System by Bill Wills | Oct | 34 | FM Television — A Better System by Bill Wills


Last published on page 30, February 1981 AR

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ASIA TELECOM '85 AND 9V1ITU

David Rankin VK30V/9V1RN
Box 14, Pasir Panjang, Singapore. 9111.

Ever since man began travelling away from his native habitat, Singapore, the 'Lion City', became known as the crossroads of South East Asia. It is a land of contrasts, of ancient legends, and today, with its ultra modern infrastructure of port and airline terminals, and telecommunication facilities, Singapore still maintains that reputation.

Therefore, perhaps it was only natural that the ITU chose Singapore as the venue for its first telecommunication forum and exhibition, to be held outside its home base of Geneva.

The period 14th to 18th May 1985, saw the cooperation between the ITU and the Telecommunications Authority of Singapore — TELECOMS — that produced Asia Telecom '85.

Equipment used was an IC751 transceiver, loaned by the local agents, an Apricot terminal supplied by Dan Nelson 9V1SS, and a beam antenna supplied by Shozo Hara JA1AN, which was positioned about 60m above ground, on the roof of the hotel.

Static displays on the IARU stand included a full scale model of the JARL satellite JAS-1, kindly supplied by Shozo Hara JA1AN, of JARL. There was also a working model of the 430MHz 'Centre-Internal Radiating Antenna' designed by Colin Richards 9M2CA, and built by Jaya 9V1VS, which provided a graphic demonstration of alternate technology to interested visitors.

During the exhibition, IARU, IARU Region III and SARTS hosted a small reception for visiting dignitaries, which carried on the tradition established by the IARU at previous ITU forums and conferences in Geneva. A PAL colour tape of 'Amateur Radio's Newest Frontier' was played as a background to the proceedings.

VIPs visiting included Mr Richard Butler and Mr Jippinge, Secretary-General and Deputy-Secretary General respectively of the IARU, Mr Goh Seng Kim General Manager of Telecoms Singapore, and Mr Enck Dau of Jabatam Talikom, Malaysia.

Whilst the use of a venue for an ITU forum outside Geneva was a first for the ITU, it was also a first for the IARU.
**AIMING HIGH**

**WAY OUT PORTABLE IN AIRBAND PORTABLES THE NEW ATC-720X**
- BALLOONISTS
- AERO CLUBS
- HOME BUILTS
- EMERGENCY
- COMMS
- RESCUE OPS
- ULTRA LIGHTS
- GLIDERS
- AIRPORT SECURITY
- HANG GLIDERS
- AIR SHOW

**EXPERIMENTAL**
- pick up head 100W CW. 200W PEP, electronic imports

**AIR SHOW**
- HANG GLIDERS
- AIRPORT
- GLIDERS
- ULTRALIGHTS
- RESCUE OPS
- EMERGENCY
- BALLOONISTS
- HOME BUILDS
- AERO CLUBS

**LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE**

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**FB SERIES CABLE & N CONNECTORS**

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<td>8.70m</td>
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</table>

**VHF-UHF SWR-POWER METER**

**MODEL**
- HS-370S

**LOW SWR TO 400MHZ. 2 KW PEP. SUPPLIED WITH TRANSFORMER OIL.**

**EXPANDED RANGE OF HF-VHF-UHF ANTENNAS**

**LOG SP**
- BROADBAND ANTENNAS
- LOG SP - 65 to 250 MHz
- $199 + $14 p&p
- 180 to 250 MHz
- $139 + $14 p&p

**HF BROADBAND DIPOLES**
- New T2-FD series provides continuous HF coverage
- 200 WATT MODELS
  - 18-30 T2-FD-2KW is 40m long. 3.5-30 MHz, both priced at $228 + $14 p&p
  - 18-30 T2-FD-2KW is 50m long. 1.8-30 MHz, both priced at $228 + $14 p&p

**MFJ-2028**
- A high performance RTTY/CV modem kit for use on a computer or teletype. Offers high noise immunity on receive
  - $142 + $6 p&p (kit) or $219 + $14 p&p assembled

**GIVE YOUR RINGO ANOTHER 15B**
- with our RK-1 decoupling radial kit.

**FOR THE RTTY OPERATOR**

**MDK-17 (KIT)**
- MOD-DEMOD

**MFJ-1224**
- Versatile RTTY/CV modem and interfacing with a computer and is supplied with software for VIC-20 or Commodore 64 + $345 + $14 p&p

**Great Circle Map**
- Now point your beam in the correct direction using this Great circle Map centered on Melbourne $2.5p.

**ANTENNA MATCHER FOR CONTINUOUS HF COVERAGE - MFJ-941D**
- Apart from being extremely versatile the MFJ-941B includes a
- 6-position coax-switch, SWR power meter, 4.1 Balun and will
- feed balanced line, single wire and coaxfed antennas.
- **$334 + $14 P&P**

**2 KW DUMMY LOAD**
- MFJ-250 Low SWR to 400 MHz, 2 KW PEP, supplied with transformer oil.
- **$89 + $14 P&P**

**MOBILE MOUNT 130-450 MHz detachable pick up head 100W CW. 200W PEP.**

**ONLY $99 + $8 P&P**

**NEW DEBEGLASS WIRE**
- Now, give your tower without having to break the wires with dozens of egg insulators, or worrying about them corroding away due to a salty atmosphere. Our Debeglass wire alternative is made
- using continuous filament fiberglass yarn, jacketed in UV stabilized vinyl. Compare the figures below.

<table>
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<th>Type</th>
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<th>UHF</th>
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</tr>
<tr>
<td>Single wire</td>
<td>0.95</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**WHAT IS STRONGER THAN WIRE OF EQUIVALENT CROSS SECTION. NON-CORROSIVE, NON CONDUCTIVE, AND HAS VIRTUALLY NO ELONGATION?**

**GFS ELECTRONIC IMPORTS**
Division of Deribar Pty. Ltd.
17 McKeon Road, Mitcham, Vic. 3132
PO Box 97, Mitcham, Vic. 3132
Tel: AA 38053 GFS
Phone: (03) 873 3777 3 Lines

**AUSTRALIAN DISTRIBUTOR**
A nice letter to hand from Angus Garland — 3.1 wavelength 16 element F9 FT Tonna at 60 feet (20,000m), fed with hall inch (15mm) helix on two metres. FT780R, THP HL 120U, 48/70 J and VX3XVJ, he beams into the side of a hill 150 yards away, which is bad news, but has a 'fair' look on other directions.

TWO METRE WORKING FREQUENCY

Further to the letter from Angus VK4AGQ — 144.100MHz. There is concern interstate too about conducting QSOs on this frequency, and the Perth AGO, and VK2FZ/4 have all worked Gordon in recent months. Angus is hoping to also work him on that band. If such support is forthcoming, I request that if these proposals are not too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz separation there is more chance of successful operating by the parties concerned. It also does not need too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz spacing could be carried over into the FM area, where it is known that 25kHz is still close enough to cause some repeaters to operate economically, and be difficult to work, when line-of-sight signals to a repeater may be 70dB, or more down, but still enough strong enough to fire up the repeater. All of this I am trying the idea during 1986 and see what happens? For those in the shack and monitoring, and with so many transceivers around with scanning facilities, it would not be a problem to cover both frequencies on a regular basis. The use of 144.125 would indicate to the listener that the station calling was available for a contact, whereas on 144.100, at the moment, when one hears a station calling CQ DX, I do not get an answer, you wonder whether you should inquire if he wants a contact or leave him alone to call again later. Your thoughts please?

TASMANIA

Good to receive a note from an old friend of mine, Col VK7LZ, a VHF operator of many years standing. He is trying to make the distance to Sydney called for COs. The 'natter' frequency of 144.125 MHz appears to be a problem in some shacks! My only concern could be that the 25kHz separation there is more chance of successful operating by the parties concerned. It also does not need too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz spacing could be carried over into the FM area, where it is known that 25kHz is still close enough to cause some repeaters to operate economically, and be difficult to work, when line-of-sight signals to a repeater may be 70dB, or more down, but still enough strong enough to fire up the repeater. All of this I am trying the idea during 1986 and see what happens? For those in the shack and monitoring, and with so many transceivers around with scanning facilities, it would not be a problem to cover both frequencies on a regular basis. The use of 144.125 would indicate to the listener that the station calling was available for a contact, whereas on 144.100, at the moment, when one hears a station calling CQ DX, I do not get an answer, you wonder whether you should inquire if he wants a contact or leave him alone to call again later. Your thoughts please?

SCATTER CONTACTS

As a result of some telephoning and word-of-mouth messages, an exercise was set up in four States for Monday morning, the 28th October, to try and contact one another via what was initially thought to be a possible meteor enhancement period, but which in fact turned out to be normal conditions.

DURING VK3UM, was the master of ceremonies, and the following stations were set up for the exercise: 144.200 — VK3XG and VK3CAD at Townsville; 144.200 — VK3U and VRX3U at Rockhampton; 144.300 — VK3NM and VK52DR at contact VK4JJ and VK4AQG; 144.350 — VK5U to contact VK4U at Mount Gambier; 144.400 — VK4JTW and Joe VK4AEW, and VK2FZ/4 have all worked Gordon in recent months. Angus is hoping to also work him on that band. If such support is forthcoming, I request that if these proposals are not too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz separation there is more chance of successful operating by the parties concerned. It also does not need too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz spacing could be carried over into the FM area, where it is known that 25kHz is still close enough to cause some repeaters to operate economically, and be difficult to work, when line-of-sight signals to a repeater may be 70dB, or more down, but still enough strong enough to fire up the repeater. All of this I am trying the idea during 1986 and see what happens? For those in the shack and monitoring, and with so many transceivers around with scanning facilities, it would not be a problem to cover both frequencies on a regular basis. The use of 144.125 would indicate to the listener that the station calling was available for a contact, whereas on 144.100, at the moment, when one hears a station calling CQ DX, I do not get an answer, you wonder whether you should inquire if he wants a contact or leave him alone to call again later. Your thoughts please?

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SCATTER CONTACTS

As a result of some telephoning and word-of-mouth messages, an exercise was set up in four States for Monday morning, the 28th October, to try and contact one another via what was initially thought to be a possible meteor enhancement period, but which in fact turned out to be normal conditions.

DURING VK3UM, was the master of ceremonies, and the following stations were set up for the exercise: 144.200 — VK3XG and VK3CAD at Townsville; 144.200 — VK3U and VRX3U at Rockhampton; 144.300 — VK3NM and VK52DR at contact VK4JJ and VK4AQG; 144.350 — VK5U to contact VK4U at Mount Gambier; 144.400 — VK4JTW and Joe VK4AEW, and VK2FZ/4 have all worked Gordon in recent months. Angus is hoping to also work him on that band. If such support is forthcoming, I request that if these proposals are not too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz separation there is more chance of successful operating by the parties concerned. It also does not need too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz spacing could be carried over into the FM area, where it is known that 25kHz is still close enough to cause some repeaters to operate economically, and be difficult to work, when line-of-sight signals to a repeater may be 70dB, or more down, but still enough strong enough to fire up the repeater. All of this I am trying the idea during 1986 and see what happens? For those in the shack and monitoring, and with so many transceivers around with scanning facilities, it would not be a problem to cover both frequencies on a regular basis. The use of 144.125 would indicate to the listener that the station calling was available for a contact, whereas on 144.100, at the moment, when one hears a station calling CQ DX, I do not get an answer, you wonder whether you should inquire if he wants a contact or leave him alone to call again later. Your thoughts please?

TASMANIA

Good to receive a note from an old friend of mine, Col VK7LZ, a VHF operator of many years standing. He is trying to make the distance to Sydney called for COs. The 'natter' frequency of 144.125 MHz appears to be a problem in some shacks! My only concern could be that the 25kHz separation there is more chance of successful operating by the parties concerned. It also does not need too many turns of the dial, which seems to be a problem in some shacks! My only concern could be that the 25kHz spacing could be carried over into the FM area, where it is known that 25kHz is still close enough to cause some repeaters to operate economically, and be difficult to work, when line-of-sight signals to a repeater may be 70dB, or more down, but still enough strong enough to fire up the repeater. All of this I am trying the idea during 1986 and see what happens? For those in the shack and monitoring, and with so many transceivers around with scanning facilities, it would not be a problem to cover both frequencies on a regular basis. The use of 144.125 would indicate to the listener that the station calling was available for a contact, whereas on 144.100, at the moment, when one hears a station calling CQ DX, I do not get an answer, you wonder whether you should inquire if he wants a contact or leave him alone to call again later. Your thoughts please?
Australia), and to continue for an hour, frequencies were set accurately and preferably the equipment left on all night to finally stabilise.

As a result of this, contacts did actually result, despite no enhancement of conditions. VK7UG contacted VK1BG with eight pings giving signals to 5x9; at 1852 contact was made on 144.970MHz, and after these early contacts, VK7UG; VK3AUU was heard by VK4YJH, but not worked; at 1808 VK4AGQ exchanged 599 reports with VK3NM; VK3UM contacted VK4GQ. Nevertheless, VK3UM did not hear the VK5 end, and it was agreed later it may have been too early for our more western position. Lionel VK3NM reported hearing Channel 0 in both directions, but was inaudible at the time he worked VK4AGQ.

It appears not to have been a waste of time, judging by the contacts which were obtained. As expected, the contacts were not as good as might have been expected. Three reports were exchanged on 3.69MHz, so all knew soon afterwards what had occurred. Suggestions are that the exercise could be repeated between 10-1414 December, when there could be enhancement from a meteor shower. The prime requirements for involvement as far as Doug is concerned are -- reasonably well-set-up equipment, and a little patience. Without these, on an accurately set frequency, the ability to keep to a set transmitting and receiving schedule, and reliability. That is to say, if you say you are going to make contact at 1800Z, you should be there and have the other end calling, with no hope of a contact.

On behalf of the group I would like to thank Doug and his friends for this exercise and schedule, and I hope it will lead to bigger and better results. Just as a matter of interest, Doug did say he observed 10 minor pings, one medium ping, and one good ping occurring around 1810, 1814, and 1858, but mostly after 1830.

**TWO METRES TO INDONESIA**

From 'The West Australian VHF Group Bulletin' for October, comes the news that Brian VK3AH, at Port Hedland on the NW coast, reported he had a long QSO with YL7 and VK2GC, on 2nd October 1985. A lot of local chatter was heard on 144.970MHz, and Brian caused a frantic search for an English-speaking operator when he called. The distance, is about the same as Melbourne to Brisbane.

This path has been open in previous years, but this is the earliest known opening and promises an interesting period ahead. It could only take one contact like this to keep operators at both ends more vigilant on the bands. Good work.

**SIX METRES**

This band has been remarkably quiet for a long time, so much so that the early evening (SA time) on 4th November, when the band opened to VK6. This info came in a phone message from Bob VK5Z2RO, but I was out at the time, oh well.

Those of us who have been on the VHF bands for a long time tend to think everyone knows about propagation, but I was reminded this was not so recently when a newcomer, over a cup of tea, asked for some explanations, particularly in regard to sporadic E, or Es as we call it, on the six metre band.

Perspective is others who could find the band to be a complete waste of time, and some of the long distance contacts we have from time to time. Please bear with me Roger VK2ZTB!

Those who were active on six metres from about 1972, 1973, 1974, etc, don't need to be too early, or any time, it can last for a short period, or for hours at a time. The directions from which you can work stations will change throughout a day of activity. It may swing from VK4 to VK6, then VK7 and perhaps back to VK4, etc. As a general rule, keep overs reasonably short, and be prepared for signals to dropout quickly. Around 1 700 to 2 000km is contactable, and after 2 000 to 3 000km either way doesn't seem to affect signals much at all. Except when the level of ionisation is increasing or decreasing, the signals can be very weak indeed, one watt can be as + 2 000km.

From time to time, you will notice that it becomes possible to work stations quite close, say within 100km of each other. This is known as "short-skip" and stations are generally very strong indeed, and indicates a very high level of ionisation reaching the maximum usable frequency (MUF) to rise, often over 100MHz, and occasionally up to 440MHz band. Experienced operators are always on the lookout for "short-skip" and you will be wise to have a look at the two metre band, where contacts can be made via Es, mostly for shorter periods than on six metres, but again with very strong signals and with distances of 2 000km or more, you don't fool around wasting time with unnecessary chatter, you hop in and exchange signal reports very smartly because the band may only be open for a few minutes.

Finally, one other phenomenon you will find is a warbling type of signal, generally warble, mostly intelligible with careful listening. This is known as "back-scatter" and is a case where you may be working from, say VK5 to VK6, and you hear this strange sounding signal from VK4. Because it is weak, you turn the beam around and the signal disappears, the only way you can hear it is on VK6. Strange? Yes! But it seems the VK4 signal is right reflected around the Es layer quite a bit, before coming down and it would seem to be reaching you by reflection from the layer, which is probably ahead of you on the VK6 path.

That is a brief outline of what happens. It will not satisfy a lot of people, but I have tried to keep the language plain, and hopefully understood. Es provide a great deal of enjoyment for VHF operators, and if it were absent, I am sure band interest would suffer. Suffice to say, it is possible, on a good Es day, to work all Australian States, all New Zealand cell areas, and a few Pacific countries as well. Such days are not common, but most days produce some periods when such contacts are possible. The rest of the time we need to be content with contacts to, say two or three States, on one hop only, but the sporadic nature of what is going to happen next keeps our interest.

Closing with the thought for the month: "Notice how no one talks about living as cheaply as two." That's because it is barely possible for one to live as cheaply as two." All the best for 1986. 73. The Voice in the Hills.

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The Astrologer Galileo, first sighted Jupiter's Satellites through his makeshift telescope on January 7th 1610.

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It has become customary for this column to feature a well known DXer, as a guest writer, at the commencement of each year. It has taken a lot ofendeavour to persuade one of our country's identities to express her thoughts on the hobby, as she has seen it through the period of in excess of half a century, due to her nature of not wanting to discuss her achievements.

The person is none other than Austine VK3YL. Austine was licensed on the 13th May 1930 and her introduction to the hobby came after a sojourn in hospital for a tonsillotomy.

Austine is not only Australia's longest living active licensed YL, but how did you become interested in the hobby? The answer was "I don't know where my interest really came from, but it can be attributed to other great events of those days."

Another great event for those days was the Royal Australian Air Force Wireless Reserve in 1918. It has been customary for this column to feature the insignia of the RAAF Wireless Reserve (Note the WIA Badge).

"Miss Austine Marshall and quoting a couple of excerpts of messages overall. I was also District Commander on many occasions and won my share of awards".

The next question that was posed to Austine was equipment. Did she buy or build? "Bought equipment was almost non existent and we scavenged parts from various shops that catered for the new medium around Melbourne. What we couldn't buy we improvised and made. Crystals were a problem due to availability and cost. I ground mine from old quartz lenses obtained from spectacles. This was achieved by grinding with different grades of emery powder on plate glass to the desired frequency. Not always easy, as the properties and cuts of the acquired quartz were not known!"

Wireless Weekly on Friday 3rd April 1931, features a story and picture of, the then, Miss Austine Marshall and quoting a couple of excerpts from the article seems appropriate. "The writer was informed that quite a lot of our respectable local 'hams' seem to be budding Romeos and during a contact with one..." and a photo! As they, send a photo of themselves in exchange Miss Marshall has quite a Rogues Gallery, showing the outfits and operators of about fifty stations."

"Her station, at the commencement Road, Murumbeena, is the rendezvous of several of the local boys at least one night per week and any visiting amateur from other States and overseas is always assured of a welcome!"

Another excerpt which all amateurs have endured I am sure is also worthy of mention. "Miss Marshall has quite a Rogues Gallery, showing the outfits and operators of about fifty stations!" "Her station, at the commencement Road, Murumbeena, is the rendezvous of several of the local boys at least one night per week and any visiting amateur from other States and overseas is always assured of a welcome!"

"When the vessel arrived in Melbourne, the Captain, Wireless Operator Tom Miller and the ships medic visited me! It was quite a thrill!"

Austine is still 'microphone shy', as she is only occasionally heard on this medium, still preferring her inaugural love of CW, with a straight hand key.

When asked what made her a YL, gave her an advantage, her reply was "No, I just felt like one of the boys."

Austine, as pictured in Wireless Weekly. (Note the WIA Badge).

"Austine, as pictured in Wireless Weekly."

Austine's RAAF Wireless Reserves call sign was 36D and her section was VM4C and she proudly quotes from RAAF Wireless Reserve Notes (AR January 1937) which reads "36D devotes hearty congratulations, not only for winning the Station Trophy but also for the section win to VM4C, which was due in no small measure to the work and initiative of this station."

Austine modestly remarked that the competition was very keen and they won by only a few points.

This lady, a Life Member and Pacific Director of the Old Old Timers Club (OOTC), a pioneer life member of the Society of Wireless Pioneers (SWOP), whom she still keeps regular schedules with members in a 'shack' surrounded by mementos, trophies, and some rare certificates including the DUF 4 Medal and certificates, first YL worldwide and first VK to achieve WAZ, Yasme Award Certificate (number 7), being a Foundation Member, YLDXCC from the Canadian Ladies Amateur Association, first VK to receive the ALARA Certificate, and one of the few YLs in the world to display the prestigious Arabian Knights Award, one condition to the obtaining of this award is to have QSOed His Majesty King Hussein of Jordan, JY1.

Austine, who has other interests apart from amateur radio such as golf and philately, does not remember when she first caught the DX 'bug' or when she achieved her DXCC, but she is near the top and is on the ARRL Honour Roll, no mean achievement. OBG, MP, in a recent interview, said she ran modest power to a dipole and was wholly CW. It is only over the last decade that SSB has become a mode that she has used together with a receive WAZ-YL, third YL worldwide and first VK to achieve WAZ, Yasme Award Certificate, and one of the few YLs in the world to display the prestigious Arabian Knights Award, one condition to the obtaining of this award is to have QSOed His Majesty King Hussein of Jordan, JY1.

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3198

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Nauru: The Future?

The President of the Republic of Nauru, His Excellency the President, Hamner de Roburt, GCMM, OBE, MP, in a recent interview, spoke of the problems facing his people in the next decade.

Originally named "Pleasant", because of its lush appearance, by an English explorer in 1875, this island was annexed to Germany in 1888 and...
Republic of Nauru

A map of the island. Note the ring road surround.

since has had quite a chequered history, including being annexed to Australia on two occasions, until it was granted independence and created a Republic in 1968.

Nauru, generally hot and humid, with an unpredictable rainfall of 2000mm annually, is surrounded by a flat coastal belt approximately 150 metres wide, fringed by a 200 metre coral reef. The island is of volcanic origin and rises 4800 metres above the sea bed, having an average height of 50 metres above sea level. This Republic, on looking at a map, is seen as a dot located near the equator in the vast Pacific Ocean, having an area of 20 square kilometres and a population in the vicinity of 7250 which is made up of twelve different races, mostly of Micronesian descent, settled in the districts of Buada and Baite. Each of these races are symbolised by a point of the star depicted on their flag which is coloured blue with a gold roundel in the middle, representing the equator band and a 200 metre coral reef.

The Committee of Ministers, comprising the Foreign Ministers from each member country, who hold the chairmanship in turn, strive for the protection of democracy, human dignity, improvement in living standards, protection of fauna and flora, safeguard of the architectural heritage and provision of facilities for the younger generation with training and sport to mention but a few of their aims. They conservatively represent the interests of some 35 million Europeans.

The source of the phosphate deposits has not been established beyond doubt, however the hypothesis is that the island's deposits are from marine origins, where organic matter (plant and animal remains and fecal pellets) in highly fertile tropical waters sinks to the sea bed, and the decay of these remains form phosphate pellets in the sediment, which is already rich in minerals.

The area has been mined since the turn of the century, when the royalty to landholders was in the vicinity of one half penny per ton. In a period of five years it is estimated that 630,000 tons was shipped for a sale value of 945,000 pounds sterling. Royalties for the period were 1320 pounds. Mining has continued with a presently estimated extraction of 1,750,000 tonnes annually, until there is very little left of the third of the island that has been set aside for claiming the phosphate. Over 60 percent of the revenue received is invested in long term trusts. One such investment is the unusually designed magnificent 52 storeyed building, Nauru House, located in the centre of Melbourne. What is left of the mining area is unusable undulating crannies and nooks that are useful for nothing, except probably for playing "hide and seek", if you feel that way inclined.

Communications on the island have improved since the Republic installed a satellite earth station in 1975, giving access to the world via Australia and Hong Kong. International telegraph and telephone links operate around the clock as does a 1200 line automatic inter-island telephone. Recreational facilities are excellent, including fishing, tennis, basketball and even Australian Rules Football is played.

It appears that the Republic, due to nearly having exhausted its main exportable product, phosphate, is very concerned as to what the future holds and the administrators are looking for alternative accommodation for their people, by trying to buy an island that will not drastically change the lifestyle of its small population.

In the future, will the prefix 2C1 become a rarity or a call of the past and will another prefix be heard on the amateur spectrum? Only time will tell.

A DX CLUB TO JOIN

A DX Club, with in excess of 400 members, has opened its doors to overseas amateurs. This Club has a most comprehensive QSL directory, programmes for computers, books and information on awards and contests, to name but a few of their services.

All one has to do to apply for membership is to write, enclosing 1 IRC, (I recommend 3 in this instance), to Mário Ambrosio, 1H0Q. ARI DX Club, via Stradella 13, 20129, Milano, Italy.

COMPANY

Les 7Q7LW, has some company. G3TBK is in the country and expects to be QRV for several months. It seems that he may pool the equipment he has with Les and operate from his QTH. Remember, Les 7Q7LW's XYL loves to receive stories when you QSL to him.

COUNCIL OF EUROPE: CALL TP2I

The Council, based at the 'Palais de l'Europe' in Strasbourg, France was formed in 1949 and comprises the countries of Austria, Belgium, Cyprus, Denmark, the Federal Republic of Germany, France, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

The Committee of Ministers, comprising the Foreign Ministers from each member country, who hold the chairmanship in turn, strive for the protection of democracy, human dignity, improvement in living standards, protection of fauna and flora, safeguard of the architectural heritage and provision of facilities for the younger generation with training and sport to mention but a few of their aims. They conservatively represent the interests of some 35 million Europeans.

The amateur station is managed by F6FQK and QSLs are handled by F6EYS. The address is TP2I, Ctr. Council of Europe, BP 431/R6, 67006 Strasbourg Cedex, France.
You should have your QSL card from this Expedition by now!

WARC BAND INCENTIVE
The WARC 24 MHz Band has had a “shot in the arm” with the inception of the 12-12 WORLDWIDE CLUB Charter Membership is available until June 1986 and to qualify you must make contact with a 12-12 Director or official station. After this date, one will be required to work 12 members and request their lifetime numbers.

A Newsletter, on a quarterly basis, is available as one of the benefits. Further information may be obtained by writing to 12-12 World Wide, C-Steve Walz, WA0XX, PO Box 222, Cherokee, OK 73728, USA with a SAE plus a couple of IRCs.

BY18BGD
The operators apparently are being allowed more freedom in what they can do. Quite a few are quoting individual box numbers for QSLing, but attention to the box number they quote and each individuals name as they will be the only ones that hold the logs for that operation. Also quoting individual box numbers for QSLing, but one will be required to work 12 members and request their lifetime numbers.

ODDS AND ENDS
Laydoh 129 is operational again, but still doesn’t count for DXCC. ** Alain 6W1HB/7Q0, hopes to be back and ‘operational’ again until March. He also, doesn’t count for DXCC at the present. ** More TAs expected on the bands soon, after the recent examinations that were held. ** The ‘Globetrotting’ Colvins quite active on CW and SSB from the African Continent. ** New station from the Peoples Republic of China is BY1AOM and signals emanate from the Shanghai Institute of Electronics. ** TR8JD claims to be the QSL route for all TRs. ** If the BYs operate from Pratas Island it shoult not count for a new DXCC Country as it is only 210 km from the mainland and under the Peoples Republic of China administration. ** 10MHz enthusiasts watch for K0WTM/HC1 around 10.101 to 10.104 MHz. ** T2WWL and T2MPL, Ward and Madge Little who are missionaries have become active from Tivuul. ** 5N25RTF was used to celebrate 25 years of independence. QSL to DK2IF. ** TK1AC, who is DJ9EH, hopes to be active until at least the end of February. ** C55PA, who is DJ9EH, hopes to be QRV until July in his off duty time from Radio Gombe. ** Two more DXCC countries to the IARU are the Kuwait Amateur Radio Society (KARS) and the Brunei Amateur Radio Society (BARS). The IARU membership now stands at 82 countries. Managers for the 75 activity from Sweden are still awaiting the printing of the special card.

THANKS
Sincere thanks are extended to the following: The Editors of weekly, biweekly and monthly newsletters including the ARRL NEWSLETTER, DX FAMILY FOUNDATION NEWSLETTER, JAN and JAY O’BRIEN’S QSL MANAGER LIST, HK8BF, REPORTS, LONG ISLAND BULLETIN, DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER. Magazines including, BREAK IN, cqDX, JA CO, JANUARY, EDE足够. DST, DXOM, VERON and WORLD RADIO.

Members have contributed include VK6 2MD, PS, EBX, 3YJ, YL and G3NQB. Overseas amateurs include GE0ED, KB6AOK/KB2E, D7NYW, W3CDQ, WB6GFJ and ZL1AMM. A HAPPY NEW YEAR and thanks to one and all.

QTHs YOU MAY NEED
3D6BB ERic Engen, 2804 Spencerville Road, Burlington, MO 64010 USA
388FR Franz Lange, Karl Kistnerstr.19, D-7800 Freiburg, FRG
A5VVK Same as above
6W1MS PO Box 950, Dakar, Senegal
8D7W Noel Lowunge, "Four Winds", Mageedi Road, Male, Maldives Islands
9M2MM Operator Mark only: PO Box 10035, Kuala Lumpur, Malaysia
9V4KB PO Box 1167, Trinidad.
A2NCC Steve Craig, High Pith Rd, Cramlington, Northumberland, UK
HAND EQUIPMENT

The FT-75 was, to say the least, different. It was an allband 80 to 10 metre transceiver with an advanced design solid state receiver and exciter, with a valve driver and final stage using a 12BY7 and 12DQ6B. Power output was in the order of 30 watts.

Both transmit and receive frequencies were crystal controlled, but these could be shifted to some extent by a VFO circuit. There was provision for three crystals for each band and a total of fifteen could be installed. For the time, the FT-75 was very compact, measuring 80 x 210 x 300mm and weighing 3.8kg.

As a tube final was used, a power supply was required for both AC and 12 volts operation. These were housed in separate cabinets the same size as the transceiver and a stacking type mobile mount was available. For home station use with the AC supply, it was possible to team the FT-75 with the FV-50 series VFO to give full band coverage. However, the FV-50 was not noted for its stability and results were not always satisfactory.

In its original application, as a mobile transceiver, it could still prove most useful, so long as you could put up with three slightly plus and minus frequencies.

Original prices were: FT-75 Transceiver $296. FF-75 AC power supply $53.50, DC-75 12 volt DC power supply $53.50, and the FV-50C VFO was $49.50. Second-hand value today would be around $175 for the entire group. A review of the FT-75 appeared in the September 1972 issue of Amateur Radio.

The FT-75 with FF-75 AC power supply.

A set of transfers was supplied so that the appropriate frequency could be attached to the dial. Two crystals were required for each channel, a 6MHz for the transmitter and a 45MHz for the receiver. The transmit crystal has a trimmer to enable the frequency to be set, but the receive crystal could not be stabilised. This, in fact, was the greatest problem with the FT-2F. As the crystals aged, they gradually drifted off frequency, producing both poor audio quality and incurable ignition noise under mobile conditions.

Price when new was $269, with three channels supplied. Second-hand value today would be about $50, depending on the number of crystals installed.

The FT-2F has the same appearance as the FT-2 and was introduced to the Australian market in August 1972. The 2FB was improved in many aspects, when compared to the FT-2. Both the transmit and receive crystal frequencies were revised to improve stability, and to give the facility to monitor a few local FM frequencies. All other features are similar to the FT-2FB.

Price when new, with three channels installed was $398. Value today would be about $100.

Next month we will take a look at the various models of the famous Yaesu FT-101.
Another year has come and gone, and as 1985 fades away into the distance, it seems a good opportunity to look back over some of the outstanding occurrences in ALARA’s tenth birthday year.

It has been a most important milestone when we consider our very small beginnings on 26th July 1975, which has been admirably documented by Mavis VK3SKS, in her History of ALARA.

In those days, licensed YL operators were few and far between, but during the ten years of its existence, ALARA has grown from a mere handful, to over 200 members, active in all facets of amateur radio, and justly proud of their achievements.

While giving ourselves a pat on the back, let us not forget the OM’s who have supported and encouraged us along the way, and to whom we would like to extend a sincere vote of thanks.

To mark the occasion, very enjoyable birthday luncheons and get-togethers were held in VKs 2, 3, 4, 5, and 6, with participants voting to hold similar functions in the future. (Well, we don’t really need any excuses, do we?)

A birthday mini-contest was held on 6th July and was won by Kim VK3CYL, with Gwen VK3DL, a very close runner-up.

During 1985, ALARA members were involved with many activities, including WICEN, JOTA, Educational Programmes, and CW Sessions.

On 6th January 1985, YL Activity Day, VK7HD, was interviewed by the ABC about YL interest in amateur radio, and was assisted in demonstrating operating procedures by several ALARA members.

At the Tasmanian Amateur Radio Convention, ALARA members operated a highly successful publicity stand, and were allocated the call sign VK7SA for one hour each day. This call sign was used by Connie VK4ATK, on 12th August.

WIA 75th Anniversary Book Pack Presentations were made on behalf of ALARA to the Regency Park Centre for the Young Disabled by Jenny VK5ANW, and Marlene VK5SQO, and to the Dalby Agricultural College by Margaret VK4AOE.

Margaret was also interviewed on television for the program “Here Tonight”. Joan VK3NLO, appeared on local television to speak about and demonstrate amateur radio.

Many members were active in amateur radio organisations, notably Jenny VK5ANW, WIA (SA Division) Councillor, Gill VK6YL, Secretary of WARG, Christine VK6ZLZ, WIA (WA Division) Councillor, Diane VK6JLY, Secretary of Goldfields Radio Club, and Bev VK6DE, Geraldton Radio Group segment of VK6 WIA News.

These are only a few of the many who have helped over the past year to put ALARA “on the map”.

On the artistic side, we were delighted with the donation of a beautifully crocheted commemorative table-centre from Margaret VK4AOE, which was subsequently the first prize in the birthday mini-contest. Marlene VK5SQO, gave us the “jazzy” cover on our birthday edition of the newsletter, and Valda, the artwork on our stickers, and especially the lovely Award Birthday Stickers. I was lucky enough to receive one of these, a much admired addition to my Award.

Marlene VK5SQO, wrote the most interesting and informative 75th Anniversary Special for AR on the WIA beginnings in South Australia.

A very important achievement for ALARA was being the first organisation to affiliate Federally with the WIA.

On a sad note, Margaret VK2AHD, Val VK4FKL, and Verle VK2MR became silent keys, and are greatly missed by us all.

There were a few changes in the Committee, and hopefully the “cogs that keep the machinery running” will function as smoothly as they have in the past.

Right Girl! Let us see what we can do with 1986.

Don’t forget the official Monday night nets during Daylight Saving Time begin at 1000UTC.

In conclusion, a very happy New Year to all.
SAMPLE EXAMINATION PAPER FOR AOCPTHEORY

This month, an examination paper for AOCPT Theory is presented for all to test their knowledge. Select the correct or most appropriate alternative.

1. The third harmonic of a transmission at 7.1MHz is:
   a. 2.3MHz
   b. 10.1MHz
   c. 21.3MHz
   d. 29.3MHz

2. For a given inductance, as the applied frequency is increased, the resistance will:
   a. increase
   b. decrease
   c. be unchanged
   d. approach the resistance value.

3. The velocity factor of a radio wave is:
   a. the speed at which it travels in a dielectric
   b. the speed of light
   c. 0.86
   d. the ratio of its speed in a medium to its speed in free space.

4. To use a FET voltmeter to measure AC voltages it is necessary to:
   a. provide switching for different current ranges.
   b. provide switching for different frequency ranges.
   c. increase the resistance of the input probe.
   d. provide a probe containing a rectifier.

5. The PIV rating of a silicon diode in a half-wave rectifier should be:
   a. twice the expected RMS voltage of the secondary.
   b. at least equal to the peak-to-peak voltage of the secondary.
   c. equal to the peak voltage of the secondary.
   d. about half the peak voltage of the primary.

6. A well regulated power supply is one in which:
   a. the internal temperature remains constant.
   b. all filter capacitors are by-passed by bleeder resistors.
   c. there is a very little voltage ripple in the output.
   d. no RF output is produced.

7. In any antenna there will be a current minimum at:
   a. the feedpoint.
   b. each quarter wave interval.
   c. 5/8 wave intervals.
   d. the ends of the antenna.

8. The Center Insertion Oscillator in an SSB receiver may have two crystals, which:
   a. allows large frequency adjustments to be made.
   b. provides selectable upper or lower sideband reception.
   c. improves the audio quality.
   d. may generate twice as many spurious signals.

9. A trapezoidal pattern is displayed on a cathode ray tube when:
   a. alternating voltage inputs are applied to both X and Y axes.
   b. two alternating voltages are applied to the X axis.
   c. an alternating voltage is applied to the Y axis and the X axis is earthed.
   d. an intermittent DC is applied to the X axis and the Y axis is earthed.

10. When two HF transmissions are made from the same location under identical conditions, the one with the lower angle of radiation will:
    a. have more extended strip zone.
    b. give rise to less tropospheric scatter.
    c. be more likely to be absorbed by the F layer.
    d. be less affected by sunspot variations.

11. Antenna matching devices:
    a. provide a low SWR at the transmitter.
    b. prevent a flat line.
    c. ensure efficient power transfer to the antenna.
    d. prevent harmonic radiation.

12. Amateur transmissions on 1.8MHz may be detected by broadcast band receivers in close proximity due to:
    a. long antennas.
    b. a very low sky wave component.
    c. ionospheric propagation being more effective at night.
    d. the usually low IF of a broadcast band receiver.

13. This device:
    a. can be used to match antenna impedance to line impedance by varying dimension Y
    b. is commonly known as a 'Delta Match'
    c. can be used only if balanced feeding is used.
    d. will reduce the radiation of harmonics so long as Y is more than a quarter wave length.

14. The transfer of intelligence from a strong unwanted signal to a weak wanted signal is known as:
    a. IF stage overload.
    b. cross-modulation.
    c. harmonic distortion.
    d. intermodulation distortion.

15. The power loss at HF through a good quality PL259/SSB28 plug and socket combination is significant because the:
    a. radius of the plug is a significant fraction of one wavelength.
    b. surface area of the inner conductor allows radiation from surface currents.
    c. the connectors are large and act as heat sinks.
    d. plug and socket surfaces are not very close contact.

16. A receiver which has poor sensitivity on 21MHz may be adequate at 3.5MHz because:
    a. atmospheric noise can be the limiting factor at 3.5MHz.
    b. selectivity is better at 3.5MHz.
    c. of the effect of two RF stages.
    d. of the low second IF.

17. As a general rule, good HF transmitter design requires that:
    a. the VFO should be isolated.
    b. temperature compensation should be set immediately after start on.
    c. pi-network tank circuits should be avoided to limit harmonic generation.
    d. PA input circuits be screened.

18. In this amplifier circuit:
    a. vacuum tubes will be operating in Class A.
    b. vacuum tubes are connected in push-pull.
    c. both tubes will be in phase.
    d. vacuum tubes are connected in parallel.

19. The harmful effects of an electric shock on the human body depend primarily on:
    a. voltage applied.
    b. length of time of the contact.
    c. magnitude and path of the current.
    d. frequency of the applied voltage.

20. Of three television receivers being used in close proximity to an amateur station, only one suffers severe interference when the station transmits SSB signals. The cause is probably:
    a. a distorted field strength pattern.
    b. excessive harmonic radiation.
    c. a receiver fault.
    d. faulty transmitter antenna connections.

21. A direct conversion receiver:
    a. usually has a high IF.
    b. must have high audio gain.
    c. may suffer severe interference.
    d. cannot be used for AM reception.

22. When a silicon junction is forward biased the:
    a. N type material must be at least 0.2 volts positive.
    b. depletion layer is enhanced.
    c. junction temperature is reduced.
    d. junction capacitance is increased.

23. This circuit is:
    a. an Armstrong oscillator.
    b. a Hartley oscillator.
    c. an audio amplifier stage.
    d. a buffer amplifier stage.

24. The total impedance of this circuit is:
    a. 10 ohms.
    b. 8.5 ohms.
    c. 70 ohms.
    d. 50 ohms.

25. "Virtual Height" of ionospheric layer is the height:
    a. at which the first reflection occurs.
    b. at which the most intense ball of ionisation occurs.
    c. at which a simple reflection would give the same propagation effects.
    d. which is necessary before multi-hop propagation can be effective.

26. An effective method of transmitting on the 70cm band would be to use a 144MHz transceiver and:
    a. a high gain 70cm antenna.
    b. two doubler amplifiers.
    c. a varactor diode.
    d. a varactor inverter.

27. Interference caused by power leaks from mains supply lines usually results from:
    a. line voltage variations.
    b. shunt inductance.
    c. loose wooden poles.
    d. comparatively low resistance paths to earth.

28. A 240 volt power transformer is designed to supply 24 amps at 230 volts to the secondary. Ignoring losses, the primary current will be:
    a. 2 amps.
    b. 5 amps.
    c. 10 amps.
    d. 24 amps.

29. "Depressing" of a moving coil meter is usually achieved by:
    a. having the coil wound on an aluminium former.
    b. tightening the springs attached to the coil.
    c. increasing the intensity of the magnetic field.
    d. reducing the radiation of harmonics so long as "y" is a significant fraction of one wavelength.

30. In a power supply using a transformerised DC-DC converter:
    a. there is no need for a transformer.
    b. the input DC is usually switched by one or two power transistors.
    c. a power transfer efficiency of 100 percent can be achieved.
    d. filtering is unnecessary.

31. A solid state device incorporating four layers of P and N material is called a:
    a. silicon controlled rectifier.
    b. PNPN transistor.
    c. full wave rectifier.
    d. voltage regulator.

32. The susceptibility to received RFI may be reduced by:
    a. using a vertical quarter wave-length antenna.
    b. using a vertical five-eighths wave-length antenna.
    c. a good earthing system.
    d. tuning on the lowest frequency band.

33. A keying filter circuit is designed so that:
    a. it sharpens the rise and fall time of each pulse.
    b. it runs each pulse smoothly into the next.
    c. its effectiveness is determined by the time constant of its RC circuit.
    d. sparking at the key contacts is minimised.

34. Communication via tropospheric propagation:
    a. does not occur when a temperature inversion occurs.
    b. requires horizontal polarisation of the antenna.
    c. is more likely to be effective over land than over water.
    d. is more likely to be effective at VHF and UHF than at HF.

35. A Class AB amplifier:
    a. can only be used at RF.
    b. will have higher efficiency and power output than Class A.
    c. has an operating angle for each tube of less than 180 degrees.
    d. will provide high distortion at AF.

36. The power dissipated in R1 will be:
    a. twice that dissipated in R3.
    b. two and one half times that dissipated in R2.
    c. about 0.6 watt.
    d. about 1.0 watt.
A 'long wire' antenna is most effective when:
- a local oscillator frequency of 40MHz.
- internal spurious signals in the receiver.
- third harmonic radiation.
- the low second IF.

The fundamental crystal for a 144MHz FM transmitter operates at 6MHz. To achieve 3kHz deviation at the transmitter output, the deviation of the fundamental oscillator must be:
- 18 times greater.
- about 18kHz.
- more than 3kHz.
- 18kHz.

Communication between two stations by means of amateur satellites is only possible:
- on bands above 420MHz.
- when both stations are directly under the satellite orbital path.
- when the satellite is in a geostationary orbit.
- if the satellite is above the horizon with reference to both stations.

A SSB communication system filter designed for use at 455Hz is likely to be:
- a two section LC filter.
- a four varactor device.
- mechanical filter.
- in the first IF section of the receiver section.

A 'long wire' antenna is most effective when:
- a centre fed with balanced twin lead.
- b slightly less in length than a multiple of a half wavelength.
- c operated only at odd harmonics of its resonant frequency.
- d vertically polarised.

Excessive FM on the output of an SSB transmitter may be caused by:
- poor regulation of the power supply.
- poor selectivity of the final .antenna circuit.
- inadequate carrier suppression.
- d failure at the amplifier stage.

The value of a resistor which is colour coded brown, black, gold is:
- 14 ohm 5% tolerance.
- 100 ohm 5% tolerance.
- 1 ohm 5% tolerance.

In this circuit, the voltage drop across:
- \( C_1 + 2\mu F \)
- \( C_2 + 3\mu F \)
- \( C_3 + 5\mu F \)

- 1500V

A fuse in the output of a mains operated DC power supply shows:
- rated at twice the input peak current.
- connected in the earth lead of the largest electrolytic capacitor.
- rated at least twice the expected peak current.
- rated at slightly more than the normal operating current.

Crystal oscillator circuits:
- a good printout was achieved.
- Eric said it was a full time job developing systems such as "Twinplex" mode, which only the traffic handling capability of the conventional simplex mode. The first amateur RTTY was in 1957, after Forest Castle KR6AK, an American Serviceman in Okinawa asked Eric about RTTY.

"I could only reply that I knew of no such activity, but added I was technically involved, as part of my work.

"I was appointed for me to listen for Forest on equipment at work on a 21MHz frequency," he said.

The first attempt failed because Eric's equipment was set at 50 BAUD. The speed was changed to 45.45 BAUD and a short time later a good print-out was achieved.

Eric was satisfied at leaving his amateur RTTY operation right there, but Forest pushed for a two-way RTTY contact. Eric then used a borrowed Test and Distortion Measuring set and sent 'The Quick Brown Fox' test to KR6AK. Forest only renewed his arm twisting with increased vigor for a two-way QSO.

"I felt quite frustrated at not being legally able to go back to them. My work programme also intervened sending me to other parts of Australia and Papua-New Guinea," Eric said.

The contact correspondence with some of the Americans who sent RTTY signals Eric had reported on, a Southern California group shipped a Model 15 teletype, which caused a stir in the Australian Customs Department. After some haggling, a compromise was reached and Eric paid duty on the teletype's motors and spares.

Upon approaching the PMG for permission to use RTTY, F1 emission, a three month trial, on a fixed 21MHz frequency, was granted. But the PMG was reluctant to allow Eric another RTTY permit due to objections from within the amateur ranks.

Eric said the objections were due to the belief that F1 required an excessive bandwidth. Eric, using a newly acquired HP spectrograph analyser, demonstrated to the PMG that the F1 sidebands were considerably narrower than AM.

RTTY was slow to catch on because of equipment shortages. Eventually permits were granted to Bill Sierer VK2EG, Chas Noble VK4DR and ZL3HJ and ZL1WB, in New Zealand.

Oceania was waking up to RTTY and the Americans were scrambling to make contact.

In the early 1960s, the Southern Pacific Radio Teleprinter Society, affiliated to NZART, was formed, with ZL1WB as President and ZK1BS and VK3KF as Vice-Presidents.

In the early and mid 1970s, when permission for RTTY was given by many countries, teleprinters were at a premium, said Eric.

The relatively recent availability of Siemens Model 100 teleprinters had given RTTY in Australia a boost in the arm and resulted in a 'pensioning off' of Model 15 and Creed printers.

Looking to the future, Eric considers RTTY as it was known today would be phased out, probably by the late 1980s, in favour of digital procedures, but he doesn't personally wish to join the computer age.

He also believes the advent of a family of satellites will eventually replace HF RTTY communication and open up a new field for experimentation.

Eric achieved WAC RTTY in 1962, his 100th country on RTTY in October 1971 (his total is now more than 131), and had won many certificates and trophies, in RTTY contests and activities.

This warm, friendly old-timer will see his days out enjoying the clattering of a teleprinter, which is 'music to the ears of the old die hard' — to quote his own words.
ETI looks at marine radio

In time for summer ETI looks at radio on boats. HF, VHF and 27 MHz — what they are and where to use them.

Also in January:
- Cellular radio — coming soon
- Aiwa V-800 review
- Special supplement contains data sheets, pin outs and spectrum info.

Available at your newsagent or take advantage of the limited subscription offer. Electronics Today, PO Box 227, Waterloo, NSW 2017.

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Melbourne Office: 1064 Centre Road, Oakleigh South, Vic, 3167. Phone: (03) 575 0222
Postal: Private Bag No 1, PO Oakleigh South, Vic. 3167. Australia Telex: AA33012
The programme will be for Phase-3D, currently call for a 250W output downlink transponder. The current subscribers to this informative material from OSCARs 9 and 11. 46-AM ATEtlR RADIO, January 1986

AMSAT AUSTRALIA NEWSLETTER

AMSAT SW PACIFIC

Consequently, I have included in this issue, details of the Japanese Amateur Satellite, JAS-1. This satellite is currently scheduled for launch in June 1986, and there is some doubt that the launch may go ahead as scheduled. The launch will be updated on the AMSAT Australia Net, as news comes to hand.

AMSAT-UK MEMBERSHIP

As a reminder to all subscribers of AMSAT-UK, the first satellite. Sputnik transmitted in the 20MHz band, not far from the 21 MHz amateur band, so the launch may go ahead as scheduled. The launch will be updated on the AMSAT Australia Net, as news comes to hand.

JAS-1 Antennas

The CPU module uses an HSOS NSC-800 (Z80 compatible) and 1 M-byte of 256 k-DRAM memory — ten 15cm x 15cm double-sided PC boards, and 327 ICs.

JARL telephone service), either analog or digital (PSK output at 1200 Baud). Digital (JD-mode) Transponder

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Solar Cells
Power output approximately 8.5W. Storage batteries: 11 Nicad cells in series, initial capacity 6Ah

Further Statistics
Satellite: 470mm high, weight 50kg. H-I two-stage rocket: 40cm long, 2.4m in diameter; weight 139.1t; capable of carrying a 550kg payload.

A chart will be available to make it easy to calculate the flight path.

AMATEUR HEROICS
Alan Gershblen W4LTA, narrowly escaped death recently, with the help of amateur radio. Whilst walking along a Bahamas beach, Alan stepped on a 550kg payload. Within a short time, Alan's foot and ankle had swollen to nearly twice normal size, and excruciating pain began shooting up his leg, and he began to have trouble breathing.

Alan instructed his XYL, Nancy, to call for emergency medical assistance on the 14.313MHz Maritime Mobile Net on his new TS430S. Although Nancy is not an amateur, she knew that the frequency was programmed into one of the memory channels, and succeeded in calling up the Maritime Mobile Net on his new TS430S. Bill had afterwards decided to have the roadworthy test done somewhere else.

When Bill called into the 14.313MHz Maritime Mobile Net, he found that his XYL had called in from the Bahamas. Bill had previously heard of this situation, but had not thought it would happen to him. He had found out that his XYL had called in from the Bahamas, and had decided to have the roadworthy test done somewhere else.

By now Bill was a bit sick of RTTY and all it stood for. He'd almost won his argument at the local garage but probably joined its companion Bill. couldn't believe it. It was a bit heavy to pick up and turn upside down, but he might as well try it.

Puffing a little, he hauled the unit up from the floor and inverted it. As though by signal the carriage immediately came of and fell on his foot. Bill yelped with pain and jumped. He found himself hopping around in his shack on one foot and still hanging on to the frequency on the VFO. It was as though the machine had eaten it. It was a bit heavy to pick up and turn upside down, but he might as well try it.

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6 Ross Hull Memorial VHF Contest concludes
11 40 metre World SSB Championship
Contest
11-12 Michigan QRP Club CW Contest
12 75 metre World SSB Championship
Contest
18-19 Hungarian DX Contest (Rules this issue)
19-21 White Rose SWL Contest (Rules
December that AR)
16-19 160 metre World SSB Championship
Contest*
24-26 CO WW 160 metre CW Contest
25 15 metre World SSB Championship
Contest* 20 metre World SSB Championship
Contest*
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15-16 1986 ARRL International DX Contest —
CW Weekend (Rules this issue)
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this issue)
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SSB Weekend (Rules this issue)
8-9 Commonwealth Contest 1986 (Rules this issue)
8-9 QCW Phone QSO Party
15-16 John Doyle Memorial VHF Day Contest
15-16 VL ISSB CW QSO Party
29-30 CO WW WPX SSB Contest
* Denotes World SSB Championship Contests
sponsored by 73 magazine. Rules for these
contests appeared in December AR.

Members may note that the CW Contest no
longer appears in the Contest Calendar. I have
been advised by the Federal Office that the matter
of this contest has been discussed and it has been
agreed that it should not continue. However, it
has been suggested that, to encourage our mem-
bers to utilise the CW mode, the President’s Cup
will be awarded on the basis of the top scorer,
if CW, in the John Doyle Memorial VHF Day
Contest. For details regarding this new approach,
which was suggested as a compromise by Wally
Watkins VK2DEW, Alternate Federal Councillor
for the New South Wales Division, will be
provided in the rules for that contest, which will appear in
February magazine.

I would like to begin this New Year by wishing
you, one and all, a very happy New Year, and also
that it will be one of great success for you in all of
your activities. I also trust that it will be a year of
co-operation and achievement within our ranks,
throughout the world.

BUSY — BUSY

I would like to point out that these notes are being
compiled in the wee small hours, early in
November, so they may make the deadline for
January. Unfortunately, I will not be able to provide
the full results of the 1985 Remembrance Day
Contest in this issue, as I had hoped, due mainly to the
fact that I have received only about 19 hours
notice of having to leave for a visit to the USA, and
that the winter weather ahead is not expected
to fade away in the near future. It is anticipated
that the first meeting of the ARRL International DX
Contest will take place in March (1-2 for phone) bring the challenge and
excitement of the ARRL International DX Contest.

For this weekend each year, the bands
shall remain on one frequency, and
form “a multi-user environment”. A station
may choose to go all out in the competition for a
top score, or leisurely chase those last few countries
needed to finish the requirements for the five-band
DXCC award.

If you participated in the 1985 ARRL Inter-
national DX Contest, you are that much ahead of
the rest.

Use of the official entry forms makes the post-
contest paper-work easier for you, and makes the
job of compiling the results a breeze. To receive a
set of entry forms, send a SAE (business sized)
and two IRCs to ARRL Headquarters.

Complete contest rules are listed below. Any
questions resulting from these rules should be
directed to ARRL Headquarters.

RULES
Amateurs worldwide are eligible.

Amateurs to work as many W/VE stations in
as many states and provinces, as possible.

CW — to be held on 15-16 February
PHONE — to be held on 1st-2nd March

The contest is for 48 hours duration each
mode, for the first weekend, starts 0000
UTC Saturday, ends 2400 UTC Sunday.

Categories:
Single Operator — one person performs
all operating and logging functions. Use of spotting
nets (operator arrangements involving assistance
through DX-alarming nets, etc) is not permitted.

Single-operator stations are allowed only one
transmitting signal at any given time.

1 All band.
transmitting section.

LOGS

ENTRIES TO BE SENT TO —

MULIPLIERS

the claim 15 points per QSO logged.

"I declare that

accompanied by the declaration:

DECLARATION

contacts for which points have been claimed will

Logs — A separate log for each band must be submitted and to include UTC, call sign of station worked, RS(T) and serial number from 001. Hungarian stations will give an Award the Contest Bureau, H- 1581 Budapest, Box 86, Hungary. Conditions of Entry — General contest ‘fair play’ sponsored.

Awards

Awards will be given to the entrant's own call area. Each

Receiving Section

Dates and times as above.

Awards

Certificates will be awarded on a similar

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the Contest Bureau, H- 1581 Budapest, Box 86, Hungary. Conditions of Entry — General contest ‘fair play’ sponsored.
Editor's Note — Recently, references have been made by another magazine about the lack of rules for the VK/ZL/Oceania Contest. All contesting members are aware that this contest is separate from the WIA Federal Contest Manager's duties, and any queries about this contest should be directed to the VK/ZL/O Federal Contest Manager, not the WIA Federal Contest Manager.

Requirements — 25 different HA/HG5 stations. Fee: 10 IRCs.

The world's coldest temperature was reportedly recorded on 14th January 1734, in Yeneseisk, Siberia. The temperature plummeted to 120 degrees Fahrenheit, below zero. Courtesy Angela Laurence.
The KENWOOD TM-2550A/TM-2570A 2M FM Mobile Transceivers have been designed to satisfy the needs of the most demanding 2m mobile operator. The new "25-Series" offers 2m FM mobile transceivers in two power output versions: The TM-2550A 45W output, and the TM-2570A, a 70 watt industry first by KENWOOD! (45W model available on special order only).

An optional MU-1 DCL (Digital Channel Link) unit provides a revolutionary new signalling capability, giving the operator maximum flexibility and efficiency in his normal, day-to-day contacts, or in high speed net operations.

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- New Easy-to-operate, Illuminated Keys
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- Memory Scan and Programmable Band Scan, Resume Selection
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- Rugged Die-Cast Heatsink, and an Internally Mounted Cooling Fan (TM-2570)
- Frequency Lock Switch
- Optional VS-1 Voice Synthesiser Unit
- Easy-to-Install Mobile Mount

**Dimensions and Weight:**

<table>
<thead>
<tr>
<th>TM-2570A</th>
<th>Width mm (inch)</th>
<th>Height mm (inch)</th>
<th>Depth mm (inch)</th>
<th>Weight kg (lbs)</th>
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<td>180 (7.09)</td>
<td>60 (2.36)</td>
<td>250 (9.84)</td>
<td>2.35 (5.18)</td>
</tr>
</tbody>
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REG STOCKMAN COMMUNICATIONS — Cnr. BANKSWORTH ROAD & SHIRLEY STREET, INVERELL (057) 87 3455
AGW 1000 COMMUNICATIONS — 51 LIDDELL ROAD, HAMILTON, NEWCASTLE (049) 69 1999
Macleay P/L LTD. — 90 KENNY STREET, VOLKANDI (045) 24 4505
E & K COMMUNICATIONS — 44 DUNTON STREET, OXION (061) 49 6497
DK ENGINEERING — 5 JASMINE STREET, PORT MACQUARIE (065) 67 0750
NORTHERN COMMUNICATIONS — 24 RALPH STREET, SOUTHPORT (066) 66 6935
FRANK BOUNDY — LISMORE (066) 66 7145

**INTERSTATE**
VIC: EASTERN COMMUNICATIONS — 168 ELGAR ROAD, BOX HILL (03) 788 1107
PARTRIDGE P/L LTD. — 1064 CENTRE ROAD, SOUTH OAKLEY (03) 575 6222
EMTRONICS — SHOP 7, 285 QUEEN STREET, MELBOURNE (03) 97 8717
BRIAN STARES — 11 MALMSBURY STREET, BALLARAT (059) 39 2608
SUMMER ELECTRONICS — 78 KING STREET, BENDIGO (054) 41 3977
TAS: HENRY ELECTRONICS — 477 NELSON ROAD, MIT 445 (07) 33 6751
WARGONG WIRELESS — 72 BRISBANE STREET, HOBART (07) 34 2003
ADVANCED ELECTRONICS — 5A THE QUADRANT, LAUNCESTON (03) 31 7175
MARINE & COMMUNICATION — 19 CHARLES STREET, LAUNCESTON (03) 31 7175
V.K ELECTRONICS — 214 MOUNT STREET, BURBURY (04) 31 7133
OLD: MITCHELL COMMUNICATIONS — 11 DUTTON STREET, WOLLONGONG (04) 29 4505
EMTRONICS — 201 HANCOCK STREET, MELBOURNE (03) 211 0988

S.A. & N.T.:
INTERNATIONAL COMMUNICATIONS SYSTEMS P/L. LTD. — 6-8 NEWSTEAD ROAD, SOUTH PARK (08) 31 31 31
W.A.: ARENA COMMUNICATIONS SERVICES — 645 ALBANY HIGHWAY, EAST VICTORIA PARK (09) 361 3511
TRI-SALES — Unit 2, 105 ALBANY STREET, MELBOURNE (09) 328 1960
WILLIS ELECTRONICS — 655 ALBANY HIGHWAY, VICTORIA PARK (09) 430 1919
RAY RADIO — 22 GRACE STREET, FERNDALE (09) 451 3516
FORD ELECTRONICS — 201 WOODCOCK PLACE, MELBOURNE (09) 418 1415

Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust) Pty Ltd and have no guarantee applicable.
Awards

The following notes are the last contribution from Joe VK4AIX, because, as of this of the month, Ken Hall VKSAKH is the new Federal Awards Manager.

Thanks Joe, for your contributions for the past 12 months. — Ed

UNITED NATIONS AT FORTY AWARD


To commemorate the event, and in the spirit of developing friendly relations among nations, the United Nations Staff Recreation Council Amateur Radio Club sponsored the UN AT 40 AWARD.

The Award will be known as THE MAJOR GEM
certificates to stations who have communicated with the United Nations prefix from 1st January to 31st December 1985. Contacts could have been made on any band or any mode.

The three stations are:
4U1ITU at the International Telecommunication Headquarters, Geneva.
4U1VIC at the Vienna International Centre, Austria.
4U1UN at the UN Headquarters, New York.

Applications must be sent to any amateur radio station or SWL (on a heard basis), that contacted two of the three amateur stations operating with the United Nations prefix from 1st January to 31st December 1985, and must include — Date; Time; Mode; Report; and Band. This list must contain a signed statement declaring the bona fides of the application. The cost of the Award is $A2-$US4, per IRC, which will be donated to UNICEF.

To assist amateurs and SWLs to obtain this award, a Club Net will commence on Tuesday, 4th February 1986, at 1000UTC on 3.566MHz ± 200kHz.

No QSLs are required. Applications will be checked against members station logs. Available to SWLs for accurate reports on transmissions heard. Reports from within VK and DX stations follow the same rules as for transmitting stations.

Cost of the Award is $A2 within Australia, and $US4 or equivalent, for overseas.

DEUTSCHER AMATEUR RADIO CLUB AWARDS

These diplomas can be obtained by licensed radio amateurs and SWLs worldwide. All contacts must be made from the same country.

Awards for club stations will be issued to the club and not to an individual operator. The DARC DX AWARDS are based on the 'European Country List' and the 'ARRL DXCC List'. All amateur bands, for which the applicant holds a valid license may be used. A set application form for the awards is available for three IRCs at the address below. The use of the official forms is obligatory.

QSL cards for all contacts must be submitted with the application. Any altering or forging will result in disqualification. The service charge is 10 IRCs, 10 DM or US$5 per award. The costs for each endorsement is 5 IRCs, 5 DM or US$3.

All applications to:
DARC DX Awards, Walter Geyrhalter DL5RJ, Box 1328, D-8950 Kaulbeuren, West Germany.

NEW DX-PEDITION AWARD

The Clippington DX Club has originated an interesting new award to encourage stations to work DXpeditions.

Valid contacts are from 1st January 1984. An expedition is defined for the certificate as a station active less than three months (in other words temporary) from one location and who is a valid operator. The territory of the operation constitutes a distinct geographic location and does not have to be in a DXCC country.

Three classes of awards are available for total points:

Class 1 — 100 points
Class 2 — 250 (CDXC Excellence)
Class 1 — 500 (Honor Roll)

You receive one point on each band and mode. The same expedition worked on both modes gives one additional point. Also you must work expeditions on five continents minimum. Valid bands are 10, 15, 20, 40; 80; and 160 metres. Detailed rules can be obtained by sending two IRCs to G6EVS, G3THR, with an SAE.

MAJOR MITCHELL AWARD

The Swan Hill District Radio Club is sponsoring an award that will coincide with the 150th Anniversary of Swan Hill.

The Award will be known as THE MAJOR MITCHELL AWARD, and is available on a worldwide basis to all amateurs and SWLs.

Australian stations require two three-way contacts with members of the Swan Hill District Radio Club. One QSO is to be with the Club Station, VK3BSH.

Overseas stations require two contacts with club members or one contact with the Club Station, VK3BSH. Bands are all modes, but no cross bands or modes will be permitted.

Contacts made through the Club Repeater, VK3BSHR, will qualify.

Maxim period of availability will be from 1st January to 31st December 1986.

100 LA

This award is issued by the Stavanger Group of the Norwegian Radio Relay League, who offer a cup in all three modes as a prize to the first applicants (licensed amateurs and SWLs on a heard basis) to obtain the requirements for the award.

Stations require 100 two-way radio contacts with six VK8 stations, which are in charge of 'operations' and will keep a list of contacts. Contacts can be with active stations only once in the year.

Applicants must provide further details and frequencies in next months issue of Amateur Radio.
KEYS AND KEYSERS (Part 1)

A request from a reader, coupled with an advertisement in a Japanese amateur publication, has prompted this reprise on the subject of keys and keyers. The advertisement featured a new key from Hy-mound, called 'the swallow'. I don't know how to describe it except to say that I have never seen a straight key with more adjustment knobs on it. I found that intriguing, because there are only two things you can adjust on a straight key. I will try to find out more about it and put it in the column in the near future.

To the newcomer to CW operation, the variety of amateur keys and keying equipment must be bewildering, indeed. In order to try to make some sense of it all, we will discuss the gear in three groups — manual, mechanical, and electronic.

1. MANUAL KEYS

Manual keys range from compact heavy-duty models designed for incorporation in military transmitters, to flashy works-of-art on marble bases, costing many dollars. A Morse key is really nothing but a switch, and you can use any on/off switch as a key. You could make a quite functional key out of scrap timber and junk metal, but before you spend a lot of money on a 'good' key, it is suggested that you consider what you are paying for. The most important factors are ease of operation and operator comfort. There seem to be two basic designs in use among the amateur population. Most Australians, and many British, use the 'high-mound' round-knobbed key of the British pattern. Design follows function, and in this case, the structure of the key is determined by the operating style, which has the forearm held above the table. Americans, on the other hand, key with the forearm resting on the table, so a low-profile, flat-knobbed key is more appropriate. Why these two widely different styles should have developed is beyond me, but it is safe to say that you should use the style which suits you best whether it is British, American, or Australian.

In my own case, it is that they get, and therefore have a tendency to move around on the table. The solutions to this problem are legion. One of many found in "Hints and Kinks for the Radio Amateur" (published by the ARRL and available from WIA Divisional Offices at reasonable cost), is to place the key on two pieces of fine-grade sandpaper, glued back-to-back. Of course, the only fool-proof method is to bolt or screw the key firmly to the table, but this method is defeated by the vibration of the key if it is fixed (and it is definitely not the way to win the heart or cooperation of the XYL if you have to operate from the dining room table).

Mechanically, most people seem to prefer a key with a great deal of inertia in the key lever, so a fairly massive bar is preferred. Additional mass is given to many keys by building them on a heavy marble base, which helps to keep the key in one spot as well as contributes to the price. As far as the engineering of the key is concerned, there isn't a whole lot of variety. Adjustments to spring tension and contact spacing is usually, if not always, provided for, but you should ensure that once set, these adjustments won't move. Contacts should meet squarely or arcing will cause a build-up of dirt. Contacts should be cleaned by drawing a piece of paper between them, they should never be filed.

If there is an apparent need to file the contacts, something else is grossly wrong. Most of the keys are made to be maintained in good quality, and it is just a matter of finding the one that 'feels right'. The cheap and nasty keys that come with practice oscillators should be avoided at all cost, for you will develop bad keying habits in order to compensate for a bad key.

The best advice for the prospective purchaser of a key is to try several varieties, so you can determine the type that suits you best before spending a lot of money on the 'lifetime' key, with contacts of gold.

The ordinary manual key cannot be beaten for simplicity and ease of operation, but there is still a lot of room for improvement. Some truly marvellous machines have been devised to simulate the actions of the hand in sending dots and dashes. Driven by springs and weights, they are all mechanically complex.

Basically, mechanical keys fall into two categories, semi-automatic and automatic. Either variety can be driven by a single paddle, which is moved to one side for dots and to the opposite side for dashes, or by separate dot and dash paddles. The semi-automatic variety will send a string of precise dots when the dot lever is actuated (or when the single paddle is swung to the dot side) but dashes are produced manually. There is no easy way to determine the state of the dashes, or their spacing, to the mechanically generated dots, and if the dots are sent too quickly in relation to the dashes, the sending rhythm is distorted and the result can be very difficult to copy.

Electronic keyers come in three basic types — manual, single paddle (side-wiper) and dual paddle (the lomick, or squeeze- keyer). Oddly enough, the 'manual' electronic keyer is the most recent development. I have designated it a manual keyer because it is driven by a straight key called the 'Fist Fighter', it acts as an electronic Interpreter; It receives sloppy signals you generate with a hand key, determines whether you intended to send a dot or dash, and generates a precise dot or dash for your transmitter, with appropriate spacing. I expect one would have to be reasonably consistent to make the thing work, so something to be frowned on — every operator's goal should be to send 'copper-plate' Morse which is not distinguishable from perfect computer generated Morse, so this is the area where the Fist Fighter should be able to shine. In other words, if it enforces a discipline on the user, and ultimately trains one to send code so well that aids are no longer needed.

We will continue with electronic keyers next month. 73 till then.

Intruder Watch

Well, we've made it to another year, and I wish you all the best for 1986. I hope you all had a good festive season, and have a couple of dollars left after all the expense that goes with it!

I have written to the DOC and asked them to remind the USSR of their promise to remove the offending station 'UMS' from the 15 and 20 metre amateur bands.

Some positive action has been taken re an Australian Intruder, viz: Radio 5AN, Adelaide. The DOC has told us (via VK50Z and VK5TL) that they are taking steps to remove the fourth harmonic from 3.564MHz. Nice to get some good news once in a while.

DAYLIGHT SAVING CHANGE

The Wednesday Intruder Watch Net, formerly on 2.540MHz, is now held on 3.585MHz, at 1030 UTC, but during Australian Daylight Saving, as last year, the time will be 1000 UTC. Anyone, of course, is welcome to join in, if you beat the QRF!

DESTROYED BY FIRE

The nuisance intruder on 7.096MHz, "RRI", from CYCLING ON Indonesia on AM, recently had their studios DESTROYED BY FIRE, but the transmitter survived. (I'll have to tell our man in Indonesia to make sure he gets the transmitter next time! I).

CYCLING ON

News has it that the upcoming solar cycle (22), will be well below average, which is bad news, so we may have to wait until cycle 23 to get ideal conditions, once again. But at least it has to be better than it has lately. Intruder activity is increasing, particularly on the lower bands, due to the state of the cycle.

We hope that they will QSY to their own frequencies when the conditions improve.

A lot of jammers have been heard on 40 metres also, of late.

FIRST CERTIFICATES

In this column for November 1985, I mentioned the striking of an Intruder Watch MERIT CERTIFICATE, to be awarded annually to those persons who had given good support to the IW in the previous 12 months, irrespective of Divisional location.

I have much pleasure in announcing the recipients for 1985:

Col Robertson VK4AKX Certificate No 001
Robin Harwood VK7RH Certificate No 002
Ivor Stafford VK3XB Certificate No 003
John Wallace VK5GLF Certificate No 004
Frank Hudd VK2KZ Certificate No 005
Norman Richardson VK4BJH Certificate No 006

Congratulations to these people, and I hope that they will accept the Certificate as a measure of our appreciation. It has been a privilege to deal with people who were in the running for 1985, and no doubt will qualify in 1986.

THANK YOU

It is time to again say thank you to those who sent reports of intruder activity for September 1985:

Peter Boskos, A Bradford, and VKs 2BG, 2DEJ, 2PSL, 3BG, 3KH, 4AKX, 4BG, 4BHJ, 4BTV, 4MR, 4NUN, 5B9J, 5GZ, 7DD, 7RH, and 7HA.

AM Intruders reported totalled 335; CW 141; RTTY 74; with 22 on other modes, and 76 intruders.

JUST REWARD!

I have received the news that Peter Boskos, mentioned above in the list of observers, a SWL who has been supporting the IW for some time, now has the call sign of VK2KPI — well done Peter.

Thanks also to VKs 5TL, 5GZ, and 4AKX for information received re intruders.

See you all again next month, and I will look hopefully to the mail for contributions to the Intruder Watch.

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While there may not be very much DX on the bands, there is still plenty of Intruders making good use of some amateur bands.

Make your listening time profitable by making out an Intruder Report and mailing it to your Divisional Intruder Co-Ordinator.

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somervile Road, Hornsby Heights, NSW 2077

Marshall Emm VK5FN
Box 369, Adelaide, SA. 5001

Pounding Brass
Well, another year has arrived! It is sobering to realise that we are only 15 years away from the 21st Century! I wonder what short-wave will be like then? Will the amateur radio service be replaced by sending messages through the sea, well away from any potential TVI and EMC hassles.

Perhaps that is why I mainly listen these days, instead of enjoying a ragchew. The hobby is not what it used to be. With the virtual information explosion related to the theoretical and technical sides of the hobby, it is increasingly difficult to keep up with the number of old-time amateurs are decreasing, and radio is all computerised into milli-second pulses.

DELIBERATE JAMMING

While listening around, have you encountered a pulse that sounds like an ambulance klaxon? This is not IOT, which was, but an ordinary jammer. It is placed in a house, quite unlike the usual “white noise” or over-modulated audio that one usually associates with jamming. It is located in the Middle East and broadcasts from the BBC, Syria, Deutsche Welle, the VOA, and, in particular, Iran have mainly been affected. There has been a major conflict in the area (Iraqi), but the Chinese have been launching extensive use of propaganda via radio, and one group have now reacted by deliberately jamming the others programming.

The Iranians have launched a clandestine outlet, which is mainly in our exclusive 40 metre allocation. This is rather difficult to hear as the jammer is very effective, and it is easily observed here. Between 1200 and 1300 UTC, on approximately 7.068 or 7.051MHz, it is easily heard, also on 7.105MHz.

INTRUDERS

Another broadcaster has appeared on our exclusive 7MHz allocation. The Voice of Greece, 9.505MHz in Greek, from 2100 to 2150 UTC, beamed to Australia. I seem to recall that the same broadcaster operated on 21.445MHz, just inside our 21MHz allocation, a few years ago. The signal was quite strong, and was also on its usual channel of 9.420MHz, but not as strong. It appears as if intruders are now a fact-of-life. Although the Chinese power-houses on 7.025 and 7.095MHz are gone, it has been observed that, there is yet another lower level signal in one of the minority languages on at 1230UTC.

The third signal is now being heard on 7.025 and 7.035MHz, but are well down underneath the jammer. The Chinese have, in fact, dropped down to 80 metres, as from October. They have re-established on 3.535 and 3.640MHz, in parallel. This usually happens in their winter season. We have, as well, our usual quota of summer atmospherics, which have been quite severe at times. Fortunately, proliferation of the higher frequencies has improved slightly during our evening hours.

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The Radio Australia’s “Talkback” programme has now been slated to Saturdays at 0310 and 0810 UTC. There are other releases, but I don’t have these to hand. The BBC’s “Voice of Greece” is heard in Russian on 7.013 and 0750 UTC, on Sundays, repeated at 1115 UTC on Tuesdays, and 0430 Wednesdays.

RELAXING WITH A GOOD BOOK

I recently obtained a copy of the book “From Wireless to Radio” by Bill McLaughlin. It is not a technical book, but rather the story behind the development of radio in Melbourne. It tells the history of the station’s development from 1927, up to the present time, concentrating on the on-air personalities from the 20s to today. It is certainly well worth paying the small fee to receive the programmes I heard in my early listening days. The book has been published by the Herald and Weekly Times, who own the station, and costs $11.95 postpaid.

Well, it only leaves me to wish you a happy

1986, and hope you enjoy listening during this year. Until next time, the very best of 73 and good listening — Robin VK7RH.

1 Herold and Weekly Times, 4424 Flinders Street, Melbourne, Vic. 3000.

Spotlight on SWLing

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EMETRONICS OPEN IN VICTORIA

The 1st November 1985 saw the opening of Emtronics in Melbourne. This Sydney-based company has added an outlet at 288-294 Queen Street, Melbourne, with the entrance off Little Lonsdale Street, becoming the "amateurs end of the city" for the VK3 amateur.

A R Showcase

The company also stocks, and is agent for a variety of imported specialised communications equipment, and have just released some new antennas.

The Tunable Mobile Coaxial Dipole Antennas, BFB1, BFB2, and BFB3 have been added to the Scalar range of ground independent mobile antennas and are primarily designed for installation on vehicles operating in off-road, and other heavy duty situations such as road construction, mining, and emergency situations. They are also admirably suited as base antennas.

The Scalar HM12 series of HF Marine Antennas (2-10MHz), have been designed to provide economical and reliable communications for small craft. The radiating elements in these whips have been impregnated into the fiberglass wall during manufacture to ensure durable long-life structure. The bulk head mount caters for sloping or vertical cabin sides. These units are designed to operate effectively down to 2MHz when used with a HF tuning unit.

For further information about the Scalar range of products contact Scalar Industries Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137. Telephone: (03) 725 9677. There are also Branch Offices in Sydney, Brisbane and Perth.

SCALAR GROUP

Scalar antennas have made a name for themselves, both in Australia and overseas, in the professional communication market.

Those who use the company's products realise the success of a communication system's overall performance depends on precision antenna engineering to exacting electrical and mechanical specifications.

Scalar Industries was formed in April 1973, when the British-owned Belling and Lee company closed its Australian operations. Managers of Belling and Lee formed Scalar and, with experienced engineering and manufacturing personnel, set out to design antennas to meet the requirements of industry and government. That objective was achieved, and Scalar antennas are to be found in a wide range of applications on HF, VHF, UHF and Microwave.

For example, the company is the prime supplier for antennas used by Telecom's mobile telephone service. Also the Defence Department, OTC, Emergency Services, Railways, Taxi Services, Paging Systems, and Broadcasters, are just some of Scalar's customers.

Scalar prides itself on its Research and Development Department, which is up with market trends and comes up with answers to antenna application problems.

Its headquarters, at Kilsyth, in eastern suburban Melbourne, has a test range to ensure their products performance and specifications.

As well as antennas, Scalar have a full range of accessories — dummy loads, coaxial switches, cable harness, coaxial connectors, cables, mounting hardware, signal splitters, duplexer, cavities, and low noise amplifiers, to name but a few.

Much thought has gone into the setting-up of this operation, with adequate displays which customers may view (as the photograph depicts), and customer liaison that is available.

Parking is readily available for participating buyers, also a cup of coffee and the expertise of Fred VK3ZZN and Tracey who are the custodians of the electronics complex.

Don't be shy, call in and see a break-through in electronic purchases, meet Fred and Tracey over a 'cuppa', and discuss your requirements, or give them a call on (03) 67 8551 or 67 8131.

TARA PATCH

A new phone patch unit for radio amateur operators has performed exceedingly well during tests between Melbourne and Gippsland.

Using an FT101B transceiver, the Tara Patch gave good audio quality, and was easy to operate. An in-built speaker allowed the radio operator to monitor both the off-phone conversation and off-air audio.

Manual switching from transmit to receive was a simple operation — and enabled full control over the third party traffic being patched.

Tara Patch is Telecom Type Approved, and replaces an earlier version which was available last year. Considerable developmental work has gone into the new model to overcome RFI problems, which appeared in some circumstances with the earlier version.

The unit is more than a phone patch — it provides the permanent interfacing of up to three transceivers at the flick of a switch, it is a control unit, and has adequate printed instructions and circuit diagram.

Inquiries may be directed to Tara Systems Australia, 8 Malvern Street, Bayswater, Vic. 3153. Or phone (03) 729 0118.

RTTY/CW COMPUTER INTERFACE

A computer interface designed to connect to a radio transceiver or receiver, and allow computerised RTTY/CW operation, is now available.

Known as the Model MJ-1224, and manufactured in the USA by MFJ Enterprises, it offers its users a number of unique features. For example, it may be used on most of the common computers available today due to its versatile I/O circuitry. Included in the unit price is a CWRTTY software cassette to suit the VIC-20/C-64.

The MFJ-1224's design makes use of a sharp eight pole, active filter when in the 170Hz shift or CW modes. This, coupled with its XR 2211 PLL detector provides good copy from almost unreadable signals. It is capable of operating on 850 and 425Hz, as well as the 170Hz shifts.

Signal tuning is made relatively easy due to its two LED tuning system. A reverse/normall sense switch is also provided for receiving reversed signals.

Operation on modes such as AMTOR, ARQ, and FEC, are accommodated by the MFJ-1224 interface, provided its host computer has the appropriate software. A single DC power source of 12 to 15 volts is all that is required for its operation.

The unit is priced at $335 plus $14 p&p from the Australian distributors, GIF Electronic Imports, 1 McKeon Road, Mitcham, Vic. 3132. Phone: (03) 873 3777.

LOCAL MOBILE RADIO

Amalgamated Wireless (Australia) Limited, (AWA), has transferred the manufacturing of its RT-85 Mobile Radio from Japan to its New Zealand based company, AWA New Zealand. This allows for reciprocal manufacturing advantages as New Zealand manufactured communications equipment is considered "locally made" by Commonwealth and State Government departments.

AWA Land and Mobile Communications Manager Mark (left) and AGL Operations Manager Brian Chapman, hold the first New Zealand manufactured RT-85.

AUSTRALIA'S FIRST UHF-ONLY TV NETWORK

From 5th January 1986, VHF Channel 0 will cease transmission in Melbourne and Sydney, making SBS-TV Australia's first UHF only television network.

The network, the multi-cultural television arm of the Special Broadcasting Service, will continue its transmissions in both cities on the existing UHF wave-length. This move follows the Federal Government's decision to make SBS-TV a UHF only network, and place future television extensions on the less-congested UHF band.

The current VHF band is widely used by TV and FM radio stations, leading to overcrowding of the wave-length. By making use of the UHF band, transmission services will be clearer, crisper, and less prone to static.

When SBS-TV began transmission as Channel 0/28 in October 1980, it was available on VHF Channel 0 and UHF Channel 28. Since then, the network's expansion has been on the UHF band only. The use of the VHF 0 signal was only a short-term proposal by the Federal Government to allow viewers time to appreciate the new network, and gain a complete understanding of the then-new UHF television.

Viewers should have little difficulty receiving adequate UHF transmissions, provided they have the correct equipment which includes a television set or VCR with UHF capabilities and, in many cases, a suitable outdoor UHF antenna.

For further information contact SBS-TV Publicity, Sydney (02) 923 4811(008) 22 6322 or Melbourne (03) 690 5233.

AMATEUR RADIO, January 1986-Page 55
NEW MEMBERS
A warm welcome is extended to the following members who joined this Division during October 1985:
J Bradshaw VK3ZMF; Graham Burton; H Crow; Gary Evans VK3XGE; Frank Foulds VK4BBN/ ZL3Ji; John Gurney; Carl Jackson; Clinton Jeffrey VK3KJU; Dennis Jurisinec VK3ZRN; Kevin Leydon VK3KLC; P Lock; Ivo Lyell; Christopher Peake VK3KCP; David Ross VK3PKO; Max Scare; Joseph Taylor VK3CVD; George Wilson VK3KU; Gordon Yorke VK3ABI; Michael Xuered VK3NMX.

PUBLIC RELATIONS
The Public Relations activity of the WIA Victorian Division has been given a real boost following the Ted Holmes VK3DEH and Harry Kraehenbuehl VK3KBA, one of the regular team of announcers on the Sunday Morning Broadcast through VK3BWI. A regular feature when this pair is doing the Broadcast is Ted's "Trivia Quiz" for those who take part in the two metre call-back. The Lead Up to the 1923 Trans-Pacific Tests; Amateur Broadcasting; VK1 Division are eligible to stand for election to any committee position, and it appears that a number of long serving members may not stand for re-election. Any member interested in standing for a committee position should contact the Public Officer, Alan Hawes VK1KAL, for nomination forms and further details. Serving on the committee can be very satisfying, and need not be an onerous task if all pull their weight. This could be your chance to put something back into our hobby of amateur radio, and can be a very enjoyable and rewarding experience.

VK1 AWARD UPDATES
Phil VK1PJ, has informed me of the VK1 Awards which have been issued up to 5th November 1985. These are:
VK7NAI Silver Upgrade
VK2PXS Basic
VK6OE Basic
VK1ZXA Silver Upgrade — VHF
VK1HZ Gold Upgrade
Congratulations to all, particularly to those earning upgrades.

UHF BEACONS
Two new beacons are operating in VK1. Details are:
Call Sign — VK1RBC
70cm — Frequency 432.410MHz, Coaxial Collinear Antenna
23cm — Frequency 1296.410MHz, Slot Radiator Antenna
Mode — AFSK
Power Output — 10 watts
These are currently located at the QTH of Ron VK1RH, in Melba, one of the NW suburbs of Canberra. Both beacons were built by Dick VK1ZAH. Our thanks to Dick for his effort in constructing these beacons.

JOHN MOYLE FIELD DAY
Don't forget the Annual John Moyle Field Day Contest — the VK1 Division will operate a serious contest, this year, as opposed to a demonstration station, as in past years. We will need operators and equipment — contact any committee member for further details.

NOW AVAILABLE
The Historical Cassette which was mentioned in previous WIA 75th Anniversary News Columns, is now available to members.

THE SOUNDS OF AMATEUR RADIO contains authentic recordings of Marconi; Spark Equipment — Call Signs; Homemade Equipment — Aerials; Early Valve Receivers; The Lead Up to the 1923 Trans-Pacific Tests; The Emergence of Voice Transmissions Early Broadcasts; Amateur Broadcasting; WIA Sunday Broadcasts; A Glimpse at Emergency Communications; A Minister For Defence J Speaks on Amateur Radio and is superbly produced by Peter Wolfenden VK3KZA; Max Hull VK3ZJ; Kevin Duff VK3IV and Chris Long

Available from Divisional Offices for $7.00 plus post and packing.
DIVISIONAL OFFICE
The telephone number for the Divisional Office is (02) 689 2417.

BROADCASTS
The VK2WI Broadcasts ended for 1985 on Sunday 3rd November. The first 1986 broadcast will be on Saturday 8th January.

DIVISIONAL OFFICE
The Divisional Office will be closed over the holiday period. It closed on 20th December and will not open again until Monday, 6th January.

AGM 1985-86
Members are reminded that the Divisional Year ended on 31st December. It is now the time for the various sub-groups to submit their reports for inclusion in the President’s Annual Report. The AGM will be held on the first Saturday after Easter.

The new year also brings the requirements of a new Council and members are requested to consider serving on the Council. Besides needing to be able to attend the monthly Council meetings, you need to be able to attend the Parramatta Office on a regular basis to carry out some of the other duties which form part of Council involvement. Nomination forms are available from the office.

CENTRAL COAST FIELD DAY
Mark your appointment book for the third Sunday (16th) in February, for the Central Coast Field Day.

NEW BEACON
The latest Divisional Beacon went on air on Sunday, 3rd November 1985. The 23cm beacon is on 144.420MHz, with approximately five watts omni-directional antenna, horizontally polarised, 30 metres above ground, and located at Dural (about 27km ASL). Reports are sought and a QSL card will be sent for all cards and written reports received.

It is part of the VK2RSY system and is keyed from the common identifier.

JOHN MOYLE MEMORIAL FIELD DAY
Are you ready for the 1986 event? No doubt you saw the 1985 results in Amateur Radio. Wagga ARC took out the Open 24 hour Section with approximately five watts. It Is part of the VK3 National Parks, or the VK4 Shires system and is keyed from the common identifier.

NOVICE LICENCE
Now you have joined the ranks of amateur radio, why not extend your activities? THE WIRELESS INSTITUTE OF AUSTRALIA (N.S.W. DIVISION) conducts a Bridging Correspondence Course for the AOCP and LAOCP Examinations. Throughout the Course, your papers are checked and commented upon to lead you to a SUCCESSFUL CONCLUSION.

In response to the Editorial in November Amateur Radio, page 7, Alan Shawsmith VK4SS, has written to advise that he has been a member of the Institute prior to passing his AOCP in August 1935. Alan is very active today compiling historical articles for WIA QEX, and the magazine.

Austine VK3YL, has been a member for 56 years, and has been licensed for 55 of those years. Austine is still very active ‘chasing DX’, and is keen on the hobby today as when she first became interested.

Ivor Stafford VK3XB, (Life Member of WIA) has been a member of the Institute for 51 years. Ivor has always been very active in Institute affairs. He was Outwards QSL Manager in Victoria for 14 years and was also Victorian Intruder Watch Co-Ordinator for quite a period, Ivor continues to work for the Intruder Watch and is recipient number three of the newly inaugurated Intruder Watch Certificates (see Intruder Watch column), which are awarded for support to the Intruder Watch. Ivor is a keen CW-man, and his name can frequently be seen in the contest column results. He is also heard regularly on the HF bands chasing the elusive DX, usually on YL! Ivor helped to celebrate the 75th Anniversary dinner by using the VK75A call sign and also attending the Dinner on 9th November 1985, with his charming YL, Mavis VK3KS.

Bill Seivers VK3CB, began experimenting with amateur radio during 1918, and joined the Institute in 1922. Bill is still an active participant in the Institute, and was seen to be enjoying himself at the 75th Anniversary Dinner, last November.

In September 1985, Alan Shawsmith VK4SS, was Outwards QSL Manager in Victoria for 14 years. He has always been very active in Institute affairs. He was a member of the Institute for 51 years. Ivor Stafford VK3XB, (Life Member of WIA) has been a member of the Institute for 51 years. Ivor has always been very active in Institute affairs. He was Outwards QSL Manager in Victoria for 14 years and was also Victorian Intruder Watch Co-Ordinator for quite a period, Ivor continues to work for the Intruder Watch and is recipient number three of the newly inaugurated Intruder Watch Certificates (see Intruder Watch column), which are awarded for support to the Intruder Watch. Ivor is a keen CW-man, and his name can frequently be seen in the contest column results. He is also heard regularly on the HF bands chasing the elusive DX, usually on YL! Ivor helped to celebrate the 75th Anniversary dinner by using the VK75A call sign and also attending the Dinner on 9th November 1985, with his charming YL, Mavis VK3KS.

Bill Seivers VK3CB, began experimenting with amateur radio during 1918, and joined the Institute in 1922. Bill is still an active participant in the Institute, and was seen to be enjoying himself at the 75th Anniversary Dinner, last November.
LEFT:
FROM LEFT: Ron VK4EN; Bernie VK4FOS; Betty VK4BET; Charlie VK4IQ; Lloyd VK4ALW; Max VK4BMW; Evelyn VK4EQ; Richie VK4RR; Les VK4LZ; Alan VK4PS; Ross VK4RO; Bill VK4XZ; Gordon VK4AGZ; Roger VK4CD; Bob VK4WJ; Ian VK4ZT.

BELOW:
FROM LEFT: Guy VK4ZXZ, VK4 Federal Councillor, Brian VK4RX, QTAC, Charles VK4BPI, MARC President, Colin VK4EX, CARC President, Roger VK4ARZ, Mt Isa Club Secretary.
FRONT FROM LEFT: John VK4QA, VK4 President, Ann VK4KXZ, VK4 Bookshop, Val VK4VR, VK4 Service/Liaison, Bob VK4WJ, TARC President.

Professor James Ward of James Cook University performing the Opening Ceremony.

c

John VK4QA present Les VK4LZ with his WIA Merit Award Badge.

Charlie VK4IQ.

Max VK4BMW and John VK4FNQ, joint winners of the Ed Roche VHF Achievement Trophy, are presented with the Trophy by Ed VK4KAA.

Don Bryant (left) and Col VK4ZCR, updating registrations at the Convention.
In the October issue of Amateur Radio 1985, we published a photograph of a group who never quite made it for the Australian first XI, but nevertheless, had some fun playing cricket, possibly at a WIA picnic.

Brian Austin VK5CA, and Tom Laidler VK5GL got their heads together, along with some information sent in by Colin Hewitt VK5CT, and between the three of them, they have come up with the names of most of the gentlemen in the photograph. They are as follows:

Top row from left — Jim Vivian VK5HQ, unknown, Jim Rosevear, Gilbert Lucas VKSSL, John Bulling VK5SK, and Gordon Bowen VK5XL.

Front row from left — Joe McAllister VK5JO, Len Baker VK5OC, Warwick (Pansy) Parsons VK5PS, Clem Tilbrook VK5GL, and Colin Hewitt VK5CT.

Thank you for taking the trouble, gentlemen.

OUT-OF-DATE

Although, by the time you read this it will be somewhat out of date, I felt that mention should be made on the resignation of John Mitchell VK5JM, as VICEN Director in VKS. John has been involved in VICEN for 14 years altogether, from 1960-64 and from 1975-85. Not that John is going to drop out of sight straight away. He will be on hand to advise Bill Warlop VK5AWM, who will take over the role of Director from John, and also to get a "Rapid Deployment Group" off the drawing board. On behalf of the VKS Division, our thanks for all the time and effort that you have put into the position, John.

ELECTRONICS SHOW

Also, somewhat ancient news is my report on the News Electronic Show, at Morphettville. When Bob Allan VK5BJA agreed to put up the aerials for me, we assumed that we would be on the second floor, where we had been for the past two years, so it was with some consternation that Bob and I viewed our site for this year — on the ground floor, with no easy access to the roof. However, with the help of Jack VK5FV, Lindsay VK5GZ, and Peter VK5PRM, aerials were raised on the roof, and as Siberia and Japan were worked, we must have been getting out okay.

The fact that we had a larger site this year didn’t daunt Peter Koen, he just brought along extra display material, including some on JOTA and the amateur involvement in the Mexican Earthquake. Incidentally, Peter’s daughter, Michelle, was featured in two editions of the "News" this week, advertising our involvement with JOTA, the first with David Clegg VK5AMK, and a Scout, in David’s shack, and two days later on her own, as a Guide.

Grateful thanks to the following VKSs who volunteered, or were otherwise coerced into becoming operators:

John VK5NX, Vince VK5ZSV, Max VK5NMX; Jack VK5FV; Colin VK5FX; Bill VK5AWM; Ron VK5AC; Steve VK5AIM; Steve VK5AOZ; Tony VK5SAH; Meg VK5AOV; David VK5OV; Ken VK5AW; and not forgetting Pauline Koen, who came to help with the display boards. (This year we didn’t have to scrounge furniture, we only had to ask!).

To all those mentioned, and anyone I may have forgotten, plus the amateurs who called in to visit us — again THANKS!!

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

HALLEY’S COMET

James Young WB6FNJ, will operate from the Jet Propulsion Laboratory’s Table Mountain Observatory, where he is a resident astronomer, to commemorate astronomical observations of Halley’s Comet during the International Halley Watch.

Operation will be limited to 40 metres during the months of February and March 1986, on a non-interference basis with normal observatory activities. Frequencies and times will be: CW — 7.120 ± 5kHz from 0400-0500 UTC; Phone — 7.228/7.277, from 0500-0600 UTC; 7.249 from 0600-0800 UTC; 7.228 from 0800-0900 UTC; 7.249 on 0900-1000 UTC.

A Certificate and an original 1986 Halley’s Comet photograph, taken at the Observatory will be available for 5 QRCs.

QSL via James Young, PO Box 576, Woodside, CA 94543, USA.

Please note that some of these frequencies are especially for overseas amateurs and are out of the Australian allocation but SWLs may care to listen out for James on them.
BEST THING SINCE SLICED BREAD — WELL ALMOST!

Plastic wraps for Amateur Radio are the best thing since sliced bread. Many other complimentary comments have been flowing in to the VK4 Divisional telephone since Amateur Radio changed its outer wrapping.

Several years ago, Alex McDonald VK4TE, and Dave Laurie VK4DT, recommended that plastic wrapping be used, but at that time, suitable commercial products were not available. Now, dashing out in the rain to retrieve Amateur Radio from the mailbox before it is reduced to a soggy mass of paper pulp in no longer necessary. The Plastic Journal is securely encased against the elements.

I know that the inevitable teething troubles have caused the Editor and production staff some concern, however, it appears that those problems have now been overcome.

On behalf of the members in Queensland, I thank you all, and encourage Amateur Radio in pristine condition during the forthcoming 'wet season'.

Guy Minter VK4ZXZ, Federal Councillor, 4 Angelina Street, Macgregor, Qld.

AR

BATTERY POWER

Recently I read in the Rad Comm magazine that several transceivers are now totally dependant on an internal lithium battery. If failure of the battery occurs, these models have to be returned to the supplier for re-programming.

Subsequently, I asked several owners of this type of equipment for their opinion of this situation, and they were disbeliefing, and assumed that the batteries were merely a "memory back-up" for stored frequencies.

Now, from this point, I continued investigation by reading the equipment reviews in various amateur journals, none of which emphasised the importance of the batteries, and the necessity of returning the rig to the supplier.

Due to the remote locations of some Australian operators, this factor would be an important consideration when purchasing new equipment.

In the future, the life span of these batteries will have to be ascertained when purchasing second-hand equipment.

Look forward to receiving comments on this subject.

Yours faithfully,

John Baxendale VK6JD, 6 Dornoch Court, Duncraig, WA. 6023

AR

SHOCKED AND DISMAYED

I am shocked and dismayed about the recent jump in examination fees imposed by the DOC.

If the Department cannot keep its fees down to a more acceptable level, the WIA should become the examining authority, with DOC endorsing the results of the exams by issuing the appropriate certificates.

DOC have now authorised approved training institutions to conduct exams for the BCOP and TVCOP with the Department issuing certificates on the results.

I believe that the increase in fees may discourage many young people from attempting the exams and substantially lose interest in this wonderful hobby of ours. This may result in the WIA not celebrating its centenary.

I strongly urge the Federal Council of the WIA to give immediate action to formulating a proposal to become the examining authority for all classes of certificate.

There are many older, experienced members of the WIA who would be well qualified to supervise examinations, on a voluntary basis, on behalf of the Institute.

This could be of great help in many country areas, where the candidates and supervisors should be able to arrange agreeable times and places for the examinations to be held.

Yours faithfully,

Don Martin VK2ARQ, 80 Greenbath Road, Moree, NSW. 2400

The Institute has expressed great concern to DOC. Possibility of WIA running exams has been considered but would need numerous volunteers in all states. The subject is still under intense scrutiny, both by DOC and the WIA. — ED.

AR

CAN YOU HELP?

I am researching the history of 23 (City of Brisbane) Squadron RAAF, in preparation for its 50th Anniversary in April 1987. The Squadron was based at Lowood, Queensland, from 1940 to 1944.

I am trying to locate any ex-members of the Army or Air Force who served in the signal bunkers adjacent to Lowood Aerodrome.

Guy Minter VK4ZXZ, Federal Councillor, 4 Angelina Street, Macgregor, Qld.

AR

CORRECTIONS TO AMPLIFIER NOISE, NOVEMBER

A number of errors have crept into the above article.

(1) Page 18 — Formula should read: $E_p = 20 \log A \cdot \left(1.6 \times 10^{-10} \cdot \frac{\text{BR}}{\text{R}_f}\right) \text{dB}$

(2) Page 18 — Formula should read: $E_p = \frac{A^2}{\text{V}_{\text{in}}} \text{dB}$

(3) Page 18 — (Bandwidth (B) was omitted on the original typed material.)

(4) Page 19 — Formula should read: $E_p = \frac{A^2}{\text{V}_{\text{in}}} \text{dB}$

(5) Page 20 — Formula should read: $E_p = \frac{1.6 \times 10^{-10} \cdot \text{BR}}{\text{R}_f} \text{dB}$

(6) Page 20 — Figure 7 — Plate load resistor should have been labelled $R_1 = 500\,\Omega$.

(7) Page 20 — Figure 8 — 50K resistor should have been a variable resistor.

(8) Page 21 — Figure 11 — (17dB of N & D) should be (12dB of N & D).

CONGRATULATIONS

It is my pleasant task to write and congratulate the Amateur Radio team for the way the the November 1985 issue was edited and produced.

AR came up at our Committee Meeting, and all said that they had enjoyed reading it, and had received very favourable comments from many other members of the Club. Interesting articles, well set out, and easy to read, were some of the compliments heard.

Thanks very much for the work which goes into AR and keep up the good work.

Best regards,

Gordon Buchanan VK3BGB, Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3195.

AR

RETIREMENT VILLAGE

It was with special interest that I read the article from Harry Atkinson VK6WZ, on a need for a "Veekay" Retirement Village. I have been thinking along these lines for some time and providing that sufficient interest is shown by amateurs for such a needed facility, I would be willing to start such a venture.

The area I have in mind is near a large provincial town in Queensland, is reasonably close to beaches, and air access to southern states is readily available. Also, radio conditions are excellent.

Any amateurs who are interested can contact me at the following address.

18 Ottawa Avenue, Caloundra, Qld. 4551.

AR

WIA CENTENARY RETROSPECTIVE

In the future, the life span of these batteries should be able to arrange agreeable times and places for the examinations to be held.

Yours faithfully,

Don Martin VK2ARQ, 80 Greenbath Road, Moree, NSW. 2400

The Institute has expressed great concern to DOC. Possibility of WIA running exams has been considered but would need numerous volunteers in all states. The subject is still under intense scrutiny, both by DOC and the WIA. — ED.

AR

The accompanying photographs show one of the bunkers, which is built into the side of Mount Tarampa. The other bunker is five miles (8km) distant, which suggests a remote transmitter/ receiver arrangement.

I would be very happy for anyone who served in either of the two bunkers to contact me with any historical information as to their role during World War II.

Yours faithfully,

FLTLT P R (Ron) Bur, No 23 Squadron, RAAF Base, Amberley, Qld. 4305
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WE SERVICE WHAT WE SELL

AMATEUR RADIO, January 1986 Page 61
HORRIE WOODFORD VK3BZH

Hannie came on air as an amateur in October 1978. After losing his sight a few years previously, he attended classes at the VK3 Divisional rooms, was first licensed as VK3XI, and obtained the full call of VK3C in 1980. But Horrie’s interest in communication dates from CMF days in the early 30s, when he served in a signal unit. Subsequently, he entered the RAOC in 1939 and served with an air signal officer, held the regimental number VX42, and was awarded the OBE for his services with the 9th Division Signals at Tobruk and Alamein.

During more recent years, we remember him as a kindly man with varied interests, many involving the welfare of others. Horrie passed away on 12th October 1985, and deepest sympathy is extended to his widow Hilda, and his family. He will be sadly missed, both on and off air.

Jim Payne VK3AZT

BILL O’BRIEN VK2BWO

It is with the deepest regret that I announce the passing of one of the most popular, and beloved radio operators of recent times, namely Bill VK2BWO. Bill was active as a SWL, and as a member of the radio club in the eastern suburbs area as far back as the 1930s, but it was not until recent years that he obtained his licence, firstly as a novice — VK2PWO, and then upgrading to VK2BWO.

During the time he spent on air, Bill had the happy knack of making a friend of everyone that had the good fortune to make his acquaintance. On their behalf may I say thanks, Bill, for your companionship, advice, and kind sympathy, you will be ever in our thoughts.

I first met Bill at the opening of the WIA building at Parramatta, and it was Bill and his XYL who hopped in to lend a helping hand. It seems that this was Bill’s way of life — to be ever there with a helping hand - and by the number of friends from all walks of life who were present at Bill’s farewell, his friends on the air are just a small segment of the many who mourn his passing.

To Joan and his family, sincere condolences.

Tom Delandre VK2JTD

JAMES D BLACKWOOD VK3ABL

Jim passed away on the 16th October 1985. He was a member of the WIA and also, the RAOTC.

Bom in Melbourne in 1915, Jim obtained his AOCP in 1946. He was a Gunner in the 2nd Division of the RAOC over recent years, and at the time of his death, was Assistant Secretary of the Club.

Clem will be sadly missed by his many friends, and particularly by the writer, as both families have enjoyed an association in excess of 40 years. Clem always had a cheery greeting, and an uncanny readiness to assist where, and whenever possible.

To all of Clem’s family we extend sincere condolences for the sudden loss of both parents in such a short period.

Ed Manifold VK3EM

COMMUNICATION?

Lindsay Lawless VK3ANJ

Box 112, Lakes Entrance, Vic. 3909

The occasional Sunday morning gathering of experts on the sunny side of Jim’s verandah was discussing the last zone meeting. “I don’t know what the president meant when he said we can’t communicate,” said Nobby. After a pause to top up the glasses Jim replied, “I have made a study of the subject since the meeting and I can now give you the benefit of my acquired wisdom.”

Jim was noted for his philosophies and the gathering was respectfully silent as Jim continued, “My favourite definition of communication is the act of imparting or exchanging information and defines information as items of knowledge. If you freeze on the push to talk switch and natter on like old George here you are re-compressing band plans.

In addition to my dictionary researches” Jim continued “I read an article about a bloke called Shannon who worked for the Bell telephone Laboratories in the mid forties: he quantified information as related to the entropy of the source of information. The theorems are based on the simple observation made by Alc: if an event is certain it’s information value is zero and the higher the probability the lower the information value. Using this concept he was able to develop techniques for maximising the amount of information in encoded transmissions such as teletype and data transmission systems. Very interesting,” said Ali “I suppose the moral of the story for our benefit, is to keep the information value as low as possible and avoid redundancy.”

“I hate to interrupt exclaimed Nobby “but there’s a fly in your beer Jim and he just avoided being sucked in with your last gulp is that information! Your communication is received and understood” said Jim emptying the remains onto the Geraniums.

“I like talking to my friends on air” said George “and they are the same. It’s good to pass the time of day. Occasionally I occasionally impart or exchange information and defines information as items of knowledge and defines information as items of knowledge. If you freeze on the push to talk switch and natter on like old George here you are re-compressing band plans.

Speaking of efficient communicators” Jim said “here come the wives. Quick, get rid of half the empties.”

MORE PRIVILEGES

As of 27th September 1985, Canadian amateurs are allowed to use any mode, anywhere in their country, as long as the push to talk switch was used. This legal power on the entire 160 metre band, 1.800-2.000MHz. Repeater use at 10 metres is also authorised. Also ATV with a 6MHz bandwidth is authorised, and SSTV transmission no longer requires a special endorsement.

There is also word that there is a possibility of a Canadian Service Licence, and a deregulation of mode sub-bands, which would allow Canadian amateurs to operate any mode, anywhere in their amateur allocation, relying only on voluntary adherence to band plans.

Adapted From The ARRL Letter. 24th October 1985
SOLAR GEOPHYSICAL SUMMARY — September 1985

Solar activity was very low with no energetic flares observed. The solar disc was without spots for much of the month and this is reflected in the 10cm flux, which had a high of 72 and a low of 67. The monthly average, 69.5 was the lowest since the last solar minimum.

The persistently low flux values of recent months suggests that the solar minima can be earlier than previously estimated — as close as mid-1986.

10cm flux readings were 1-4 = 72; 5-6 = 71; 7 = 70; 8-9 = 69; 10 = 69; 11, 12 = 68; 13-16 = 70; 17 = 69; 18-19 = 68; 20-24 = 68; 25, 26 = 67; 27-30 = 68. Average was 69.5. The sunspot average was 3.9.

GEOMAGNETIC

14th September — The geomagnetic field was at storm levels 0600-1500UTC A = 27.

16-17th September — The field was active on 16th and at minor storm level 1100-1300UTC. Unsettled on 17th with active levels 1000-1200UTC. A = 25,16.

19th-21st September — The field was at storm level on 19th particularly between 0800-1300UTC and 1530-1730UTC. Active on 20th with disturbance ending around 1900UTC on 21st. A = 28,21,18.

24-27th September — The field was generally at unsettled to active levels. A = 15,18,17,17.

The quietest days were: 4 = 2 5 = 2 3 29 = 4 2, 21, 30 = 5.

Data courtesy of the Department of Science, IPS Radio and Space Services.

TEST EQUIPMENT

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When the catastrophic earthquake rumbled ashore from the depths of the Pacific Ocean off Acapulco, Mexico, topping buildings and killing thousands in Mexico City, it also cut off the nation from the rest of the world.

All communication links snapped along with most of the city's electric and telephone.

In the Voice of America Washington newsroom, as reports of the earthquake came in, Chief Assignment Editor Edie Apple tried to call VOA Correspondent Gary Tredway, in Mexico City, but the line was dead.

Ms Apple, a veteran correspondent, assigned Charge Editor Andy Guthrie to make contact in anyway possible. Guthrie turned to the VOA engineering branch which engineered the amateur radio club station K3EKA. Three members of the club, Hugh KB3TB, Richard WASPV and Greg K9FL quickly turned a section of the work bench into a listening post.

Within minutes, the words “This is XE1VIC, go ahead with your traffic” were heard on the VOA receiver. The station of Victor Keller XE1VIC quickly became one of Mexico's few electronic links with the outside world. Broadcasting in both Spanish and English, Victor ably handled international traffic, relaying messages from the news media and relatives about family members in the quake zone.

The VOA equipment, an FT757 and scaled-down antenna system, were not reliable enough to consistently reach Victor, so it was necessary to use relay stations, WB6HVN, WASPME, and K3EKA to pass urgent messages to Correspondent Tredway and Reporter Lucy Conger. The reporters were urged to make their way to any amateur's station so they may relay information of the earthquake to VOA's 24-hour newsroom, as reports of the earthquake came in, McKenney with FCC regulations.

Eventually, Tredway and Conger were able to file a report via K3EKA, XE1MT to Julian WASPME, and the extent of the quake's damage was prepared for VOA transmission.

Plans are being studied to use the facility of K3EKA in the event that whenever regular communications are not available.

The Voice of America is the US Government's International Radio Broadcasting Agency, transmitting more than 1,300 hours of programming every day in English and 41 other languages to an estimated audience of 110-million listeners, each week. A branch of the International Radio Broadcasting Agency, (thereof)

VOR USES AMATEURS

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From October's South Australian Journal

Page 64-AMATEUR RADIO, January 1986
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This month's magazine contains the Amateur Radio Awards for the preceding year, (see p 31). These are awarded each year to encourage participation in Amateur Radio by members — will your name be included next year?

There is quite an amount of general information about the future directions of the hobby. Firstly, there is a brief summary of the ARRL Conference held in New Zealand, during November. This summary details some of the items which were decided at future conferences. Repeater — the future, page 8, details repeaters generally, and indicates some of the steps the WIA proposes to take on various repeater issues.


The Remembrance Day Contest results are announced on page 40. Congratulations are in order for the VK1 Division, the winners for 1985. Also, in the contest pages, are the rules for this year's John Moyle Memorial Field Day Contest. Remember to read them carefully.

This month we welcome a new Federal Awards Manager, Ken VK6AKH, to the columns of AR. Ken begins his column with an updated listing of the WAVKA Award.

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**NEWS FROM GREAT BRITAIN**

**NEWS FROM LONDON**

50MHz for UK — The Department of Trade and Industry has announced an allocation of 50.000-50.500MHz for the amateur radio service, effective from 1st February 1986.

This follows an experimental period, begun in February 1983, when 40 special transmitting licences were issued to existing amateurs to use 50.500-52.000MHz for a program of experimental testing and learning about propagation conditions in the band, followed by a further 60 licences issued in 1984.

At that time, UK 405 line television transmissions still existed in Band 1, and all amateur working took place outside normal broadcasting hours, using low power. All television transmissions ceased early last year, and following negotiations with the RSGB the DTI has finally agreed conditions for the new band, taking into account the continuing use of Band 1 by European broadcasting stations.

Restrictions have been imposed to minimise the risk of amateur transmissions interfering with established European services, but the DTI has agreed to review the use of the band after a year to see if the operating conditions can be revised.

The conditions from the first of this month are:

- The allocation shall be primary within the United Kingdom.
- Initially, only Class A licensees permitted access to the band.
- Maximum power at all times shall be: — Carrier 14dBW (25 watts) ERP; PEP 20dBW (100 watts) ERP.
- Maximum transmitting antenna height to be 20 metres above ground level.
- Antennas shall be horizontally polarised.
- Mobile, portable, or temporary premises operation will be allowed.
- There will be no restriction on modes or hours of operation.
- No repeaters will be allowed on the band.
- Existing permits will be withdrawn.

Have we had a few ideas fed back to us recently, particularly because of the stories about the future of amateur radio which have been raised over the last six months or so. There is an excellent discussion of that subject elsewhere in this issue. But it does seem that we need more articles aimed at the newcomer and the Novice. Construction articles, simple pieces of test equipment, or accessory items for the usual commercial transceivers. Antennas are always a popular subject, because most people can still build their own.

Don't worry if your article seems too elementary — we will tell you if it really is! On the other hand, many things which the older amateur takes for granted, everyone knows that may be news to the newcomer, and perhaps just the missing pieces needed in the theoretical jigsaw he has struggled with for weeks. Is there a generation gap? If so, it may well cut both ways.

There are thousands of young people out there who have cut their teeth on computers and to whom digital techniques are second nature. But to the older amateur, maybe quite at home with RF and linear circuits, this "newfangled digital technology is all black magic!" Here, surely, is an area where the young can teach the old.

But even though the future of the hobby inevitably involves more and more digital technology, may I sound a cautionary note. We have a need for more basic theory and hardware-oriented articles, rather than just basic programs and simple software. Someone I was talking to recently is, for example, eagerly awaiting a "how to build it" article about a good stable VFO with digital frequency readout. Does anyone have one, ready to write up? We have space ready and waiting to print it. And how about some packet-mode hardware?

Also in this issue we have another article on aircraft enhancement of VHF and UHF propagation. There are apparent divergences of opinion on this topic, which can only be resolved by more users getting into the SSB DX scene on two metres and 70cm. More stations, spread more widely, would show more clearly the dimensional extent of this fascinating phenomenon, which permits communication on a near-routine basis over distances many times farther than line-of-sight, without benefit of inversions, ducting or Sporadic-E. Here is a chance for the Amateur Service to add something to the fund of human knowledge, to be once again at the cutting edge, as amateurs always were in earlier years.

Have I thrown out enough challenges yet? I hope so. Let us get into the action!

Bill Rice VK3ABP
Editor AR

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**RSGB TESTS MORSE**

Britain’s Department of Trade and Industry announced on 2nd December 1985, that it had appointed the Radio Society of Great Britain to take over the running of amateur radio Morse tests on its behalf from 1st April 1986.

British amateurs have two types of licence, Class B — VHF only, and Class A — all bands. The 12WPM Morse test, which is a pre-requisite of the Class A Licence, was conducted for many years by the Post Office, and is currently administered by British Telecom. DTI invited new proposals for running the test from the RSGB, Telecom, and the City and Guilds of London Institute, the examining body for the radio amateur’s examination.

The new arrangement includes a seven pound test fee, to be held at this level for two years, and the establishment of at least 70 testing centres, one in each county, region, or designated island. Tests will be held every two months in each centre.

There are currently 27,000 Class A, and 27,783 Class B licence holders in the UK.

Contributed by AR’s London Correspondent, Tony Smith G4FAI

---

**SAINT DAVID’S DAY**

The Saint David’s Day Special Event Station will again be operational on the 1st March 1986 to celebrate the National Day of Wales.

The station will be operational from midnight Friday 28th February to midnight Saturday 1st March 1986. Activity, conditions permitting, will be on all the HF amateur bands.

A team of enthusiastic operators will be pleased to make contact, and as always, will endeavour to send greetings to as many countries as possible, world-wide.

The Special Event QSL card will be sent to all amateurs making contact with the SDD station.

SWLs are also welcome to send reports.

All licensed operators interested in the attractive Saint David’s Day Award should aim to meet the following requirements:

- Contact should be made with the Special Event Station on Saint David’s Day, 1st March, and five other Welsh Amateur Stations during the month of February and March 1986. To claim the Award, forward copies of logged contacts together with seven IRCs, to cover P&P to ‘Event Co-ordinator, R.R Jones G4WWQ, ‘Bryn-Ynys’ 13 Strawberry Place, Morriston, Swansea, West Glam. SA6 7AG.

**SOUND MAGNIFIED 1 000 TIMES**

In the aftermath of an earthquake, rescue workers have an near impossible task — how to locate survivors who are trapped under rubble. GCS Communications Control Inc manufactures of sophisticated security equipment, have devised a device which amplifies sounds up to 1 000 times. It can effectively allow rescue teams to hear sounds emerging from buried victims and thus pinpoint their location. These sounds would be absolutely ineffective to detect with the unaided human ear.

This unit has been used by firefighters to determine life behind closed doors, and to detect fires within walls. It has also been used with success in mining cave-ins.

Contributed by IR’s London Correspondent, Tony Smith G4FAI

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**AMATEUR RADIO**, February 1986-Page 3
In my article “Enhanced VHF/UHF Signal Levels due to Aircraft”, (AR Oct 1985)¹ I explained how the phenomenon known as Aircraft Enhancement² could be accounted for by the known effects of passive reflectors. An essential point of my article was that it was a presentation of irrefutable mathematical truths derived from engineering texts. It was not theory. The technical editors of AR may have missed this point because they have subsequently published a contradictory article by Roger Harrison VK22TB³ in which he expounds a theory which purports to explain the phenomenon. The Harrison article is scrutinised in this critique and some points, briefly mentioned in my previous article, are explained in greater detail.

**Differing Opinions?**

Giving reasons why he doesn't think that direct reflection from the aircraft is the cause of aircraft enhancement, Harrison states "There are widely differing opinions, even in the engineering texts, as to how to calculate the signal levels after reflection from the aircraft." (As a passive reflector) Is this really the case? I consulted several texts and compared their formulas for passive reflector gain and path loss via passive reflector links with those given in my previous article, hence-forth called "Aircraft Reflectors"¹. Following is a summary of what I found:

- a — Norton⁴'s formula for the path loss on a two hop system using a passive reflector in the far field is:

\[ L_p(DB) = 171.1 + 20 \log d_1 + 20 \log d_2 - \log a^2 \]

The distance is measured in miles and \( a^2 \) is the effective area of the passive reflector in square feet. This is the same as in Aircraft Reflectors¹. The formulas for effective area and passive reflector gain are the same as in Aircraft Reflectors¹.

- b — The ITT Hand-book⁵ editors do not give a formula for path loss being content to simply refer to Norton⁴, ie the same as in Aircraft Reflectors¹.

- c — Jakes and Robertson⁶ give the total transmission loss for a 'single mirror passive repeater' as:

\[ ( \text{Loss } dB) = 10 \log \left( \frac{a_1^2}{a_2^2} \right) \]

As before in Aircraft Reflectors¹, AT, AR, and AI are the effective areas of the transmitting, receiving, and passive reflector antennas respectively and \( d_1 \) and \( d_2 \) are distances in the same units.

In Aircraft Reflectors¹ AT and AR are isotropic antennas so the effective areas of passive reflector antennas must be used in order to compare the results. The effective area of an isotropic antenna is:

\[ \frac{\lambda^2}{4 \pi} \]

When this adjustment is made, the results obtained with this formula are the same as given in Aircraft Reflectors¹.

- d — Brodhage and Hormuth⁷ give the path loss as:

\[ \text{Ap(db)} = 20 \log \left( \frac{a_1 \times a_2 \times \lambda^2}{\text{Sep} \times \text{Seu}} \right) \]

\( a_1 \) and \( a_2 \) are in metres, \( \text{Sep} \) is the reflector effective area and \( \text{Seu} \) is the effective area of the parabolic reflector used at the terminals. Substituting the effective area of isotropic antennas the formula becomes:

\[ \text{Ap(db)} = 20 \log \left( \frac{a_1 \times a_2 \times \lambda^2}{\text{Seu} \times \text{Aeff}} \right) \]

This gives the same path losses as given in Aircraft Reflectors¹.

- e — Freeman⁸ says the path loss a is:

\[ \text{GT} + \text{GR} + \text{GA} - a_1 - a_2 \]

\( a_1 \) and \( a_2 \) are transmitting, receiving and passive reflector antenna gains and a's are path losses, all in dB.

\[ \text{GA} = 20 \log 4 \pi \cos \alpha \frac{a}{\lambda^2} \]

(Passive Reflector Gain)

- f — Card⁹ states "The gain of an evenly illuminated flat reflector is the same as the gain of a dipole in combination with reflector" and:

\[ \text{G(e)} = 10 \log \left( \frac{\lambda^2}{a^2} \right) \]

(A is Aeff)

Note that this is the one way gain, ie half that given in Aircraft Reflectors¹. However he also states that the path loss F is:

\[ F_1 + F_2 - 2G \] (Fs are the path losses)

So he uses G twice anyway. This gives the same results as in Aircraft Reflectors¹.

- g — The formula for path loss used by the Lenkurt Electric Co Inc¹⁰ gives the same results as in Aircraft Reflectors¹. It is formula (27) on page 100 of their publication.

- h — On page 99, referring to 'billboard' type metal reflectors the author states "With surfaces of adequate flatness it is close to 100 percent efficient, as compared to about 55 percent efficiency for antennas".

Furthermore, the passive reflector acts as both a receiving antenna and a retransmitting antenna, and it's 'gain' is therefore applied twice. It is the same as in Aircraft Reflectors¹.

- i — "What about Picquenard¹¹" Harrison implies that his opinion, at least, differs. The truth is that Picquenard doesn't address the matter of radio links using passive reflectors at all.

- j — Freeman¹² also states that the path loss \( F \) is:

\[ F = 171.1 + 20 \log d_1 + 20 \log d_2 - \log a^2 \]

The distance is measured in miles and \( a^2 \) is the effective area of the passive reflector in square feet. This is the same as in Aircraft Reflectors¹. However he uses G twice anyway. This gives the same results as in Aircraft Reflectors¹.

Furthermore Harrison's calculation of path loss between VK3UM and VK22ZAB is also wrong because it does not include the gain of the passive reflector.

The foregoing also clearly indicates that the methods used in Aircraft Reflectors¹ are correct for passive reflectors and also for aircraft because there is surely no doubt that the performance of a flat piece of metal as a reflector is not dependant on the nature of the supporting framework behind it even though this may the rest of an aeroplane.

**Observations**

Harrison's summary of reported observations contains several which require comment. Are they accurate? Are they reported in an unbiased manner? Let us examine a few of them:

- a — "Signal level 'lift' observed is estimated to be 50-60dB." Signal level lift from what? Where is this observation? Is it the same everywhere? One thousand to one million times is a fair degree of uncertainty! It is difficult to imagine this observation being of any use to anyone.

- b — "Signal level lift and period of enhancement are dependant on upper-air wind conditions, etc".

This is not an observation; it is a conclusion. Is it couched in this manner because Harrison has no hard facts to back up his hypothesis? In fact, all amounts to is that Canberra amateurs claim that when aircraft enhancement is poor from Melbourne, aircraft report turbulence. It has not been clearly shown how these observations are related to Sydney to Melbourne contacts and it is not clear whether or not turbulence is always reported when aircraft enhancement is always poor when turbulence is reported.

In any case signal conditions vary for a quite different reason and at best there is only a coincidental relationship to turbulence. This is explained in more detail in the next section of this article.

- c — Gordon McDonald VK22ZAB

Harrison's statement about differing opinions is wrong. In fact, all authorities agree that the passive reflector has gain, they agree on how much gain a reflector of a given size has and as a result they all agree on the path loss to be expected from a given link with a passive reflector in it. Their methods differ slightly but the end results are invariably the same.

Furthermore Harrison's calculation of path loss between VK3UM and VK22ZAB is also wrong because it does not include the gain of the passive reflector.

Contributors Jakes and Robertson² give the path loss formula for passive reflector enhancement experiment when VK3UM was active on two metres rather than 70cm as he is.

- d — "Stations in Frankston (Melbourne) hea
than Frankston, however he is also located west of a line between Frankston and Sydney and about 15km north-west of a line between Frankston and Canberra. Later, this article I will show that this is more significant than the 40km mentioned by Harrison.

d — "Backscatter propagation is noted between Canberra and Sydney stations . . . . This phenomenon is only noted during exceptional 'lift conditions'."

This needs to be clarified quite a lot. In fact at least two Canberra amateurs who regularly take part in aircraft enhancement contacts have been in the habit of referring to signals heard via the back of their beams as 'backscatter'. How can genuine 'backscatter' be correlated to 'exceptional lift conditions' under these circumstances?

can exception lift conditions? Between Canberra and Melbourne? Both? Or between Sydney and Canberra perhaps?

In spite of these uncertainties, backscatter does occur and when it does doppler shift also occurs. The magnitude and direction of the doppler shift is consistent with back reflections from an aircraft retroreflecting from both Sydney and Canberra, ie past Canberra on its way to Melbourne. Harrison does not mention this, probably because he didn't know about it. However, it does not help his hot air theory much either.

Incidentally, while on this subject, some amateurs have expressed concern about the lack of doppler shift on Sydney-Melbourne and Canberra-Melbourne contacts.

Doppler shift only occurs when there is a change of path length, transmitter to receiver. This happens in the backscatter case but does not happen, or strictly speaking, only happens marginally when the aircraft is near the terminals, during the Sydney-Melbourne and Canberra-Melbourne contacts. Hence there is no doppler shift on those paths.

e — "The size and type of aircraft seemingly has little bearing on the enhancement characteristics", etc.

This is simply not true. It would help the Harrison theory if it was, but it clearly is not. I know of no observers anywhere who would agree with this.

The signal levels are clearly proportional to the operating altitude of the aircraft. This has been confirmed many times over the Sydney-Melbourne and Canberra-Melbourne paths as well as in local reports of overseas observations, albeit somewhat sloppy observations.

Furthermore, dozens of aircraft enhancement contacts between VK2ZAB and VK4s AUR, AGQ, KJL, and others less frequently on 432.3MHz have been made at signal levels consistent with the size of the aircraft operating between Brisbane and Sydney at the times when the contacts were made. The facts are clearly consistent with the path loss and signal level calculations made on the basis of the aircraft as a passive reflector as set out in Aircraft Reflectors. Harrison's summary of observations is clearly biased toward his hot air theory. The omission of the doppler shift in the backscatter observation and the false suggestion that the aircraft size is unimportant, together with the lack of comment on operating altitude clearly shows this bias.

However, why does the enhancement mode fail sometimes and what is this about the footprint moving backwards? Let us examine these matters further.

**Radar Holes**

In Aircraft Reflections I drew attention to the fact that anomalous propagation, other than aircraft enhancement, occurs at some time almost every day.

When a group of amateurs are participating in regular scheduled operations, as the aircraft enhancement fraternity are, the laws of chance dictate that other forms of anomalous propagation must sometimes coincide with the aircraft enhancement time slot.

Tropospheric temperature inversions occur frequently causing super-refraction of radio waves and tropospheric ducts. This should be well-known to all VHFR/HF enthusiasts because it gives rise to enhanced signal levels at distant locations and hence 'troppo' contacts.

When ducts coincide with aircraft enhancement schedules it may be thought that the combination would result in even bigger and better signals and indeed sometimes it does. My first 70cm contact with Angus VK4AGQ, in Brisbane, was undoubtedly aircraft assisted tropo.

However, perhaps more frequently than not, the coincidence of ducts and aircraft results in poor aircraft enhancement signal levels.

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**Path Geometry and Footprints**

Harrison says that: a — The fact that Sydney (or Canberra) enhancement signals are heard in Frankston, and the are heard at Chirnside Park (VK3UM) indicates that the signal footprint on the ground moves backwards, ie towards the aircraft; and b — That direct reflection from the aircraft would require that the footprint moved forward at twice the speed of the aircraft. Thus, he says, the two are contradictory.

This nonsense. Proposition a is wrong, proposition b is irrelevant and the contradiction Harrison would like to see does not exist.

The signal footprint on the ground is in the form of a long ellipse modified by terrain irregularities. The long axis of the ellipse lies along the continuation of a line joining the transmitting station with the reflecting aircraft. This pattern may be simulated with a torch (flashlight) resting on the floor of a darkened room so that its beam is at a slight positive angle to the floor, ie the floor is not directly illuminated but the circle of light falls on a wall about 500mm up from the floor and say four metres from the torch.

Now hold a small (75-100mm diameter) mirror face down and parallel to the floor. Lower it along a line joining the torch and observe the pattern of illumination on the floor.

The shape of the mirror will change the pattern somewhat, as will the shape of the aircraft change the footprint. However, our purpose will be served without considering the complexities introduced by this factor or diffraction effects at the edges, departures from flatness or the earth's curvature. The footprint will be generally ellipsoidal with the long axis along the signal path.

Now consider Figure 2. This illustrates the general case encountered in practice. The flight path of the aircraft crosses the signal paths from transmitter to receiver at A.

The signal footprint illuminates receiving site 'A' at a medium distance from the transmitter, it then illuminates site 'B' somewhat further away from the transmitter and then sites 'C' and 'D' simultaneously even though 'C' is closer to the transmitter than 'B' and 'D' is further from it.

The time between illumination of successive sites depends upon the speed of the aircraft, the location of the receiving sites relative to the transmitter and the angle the flight path makes to the signal paths.
The case cited by Harrison where the whole signal footprint moves forward at twice the speed of the aircraft, requires the flight path to coincide with the signal path from the transmitter to each observing receiver. This situation would be rarely encountered in practice and doesn't apply to the Sydney or Canberra to Melbourne situation.

Note also that the footprint never moves backwards.

Still referring to Figure 2, consider the transmitter is located at Canberra and receiver B and C are at Frankston and Chirnside Park respectively. The length of time between illumination of these two sites will be that time taken for the aircraft to get from point X to point Y.

I plotted the site locations and signal paths on radio navigation chart AUS RNC 2, available from the Department of Aviation, along with the flight path of large aircraft such as 747s, which leave Sydney on a noise abatement heading which takes them east over Botany Heads to a point, about 15km from the coast, where they turn right and track directly for Eildon Weir. This track takes them between trunk routes which leave Sydney on headings of 195 and 220 degrees (magnetic) and which may be used by domestic aircraft not equipped with inertial navigation systems.

Assuming a nominal speed of 850km/h the aircraft will cover the 33.36km from point X to point Y in 2.35 minutes. This is the time between signal 'peaks' at Frankston and Chirnside Park (VK3UM) for that aircraft reflecting a signal from Canberra. For signals originating at Berowra Heights (VK22AB) the geometry is different, points X and Y are 80.61km apart and the time difference is 5.69 minutes for a 747 on that flight path.

These are nominal acquisition time differences only because factors which will result in small variations in acquisition times have not been taken into account. These include terrain factors, differences in LAR, the space loss via the aircraft reflector, and differences in receiver thresholds at the two sites.

Signal Strengths
Harrison observes that amateur 'S-meter' reports are meaningless, and I agree with him, but he then goes on to take them more or less at face value. Furthermore, his suggestion that says VK18G's signal on 432MHz can traverse the gap between Canberra and Melbourne, be backscattered from the ground, traverse the gap between Melbourne and Sydney and then retain such power that I can receive it at readable level, all with the aid of a ball of hot air, is simply mind boggling.

Nevertheless, I have been told that amateurs, particularly some located in Melbourne, have difficulty accepting the signal levels predicted in Aircraft Reflectors because their 'S-meters' indicate higher levels at times. I am still inclined to the view that this is primarily due to bad calibrations and that if I had said that say -105dBm was equal to 10dB over S9 instead of the IARU standard S7, there would have been no problem. There is also some evidence to indicate that the aircraft enhancement fraternity does not take into account phenomena like elevated ducts and temperature inversions which may reduce the path loss from the aircraft to the terminal sites under some circumstances.

There is no doubt that the signal levels received due to aircraft enhancement on its own is determined by the transmitted power, transmitting aerial gain, receiver aerial gain, cable losses and the path loss with the aircraft as a passive reflector. It may be that this last factor is not properly understood.

The formula for the path loss via an aircraft reflector is:

$$PL = P_t + G_t + G_r + L_z + L_s + L_e$$

where $P_t$ is the transmitted power, $G_t$ and $G_r$ are the transmitting and receiving aerial gains, $L_z$ is the cable loss, $L_s$ is the path loss with the aircraft as a passive reflector, and $L_e$ is the elevation ducts and temperature inversion loss.

Figure 2 — Plan of Site Geometry.
Lar(dB) = 141.98 + 20 log d1 + 20 log d2 - 20 log Aeff

Where d1 and d2 are the distances in km from the terminal sites to the aircraft and Aeff is the effective area of the aircraft reflector in square metres. For a flat sheet:

Aeff = A sin θ

Where A is the reflector area in square metres and θ is the angle of incidence of the signal.

Consider the following:

a — Obviously, if the distances decreases the path loss will decrease. Signals from Canberra are stronger in Melbourne than signals from Sydney.

b — The examples given in Aircraft Reflectors1 assume d = d. If d does not equal d2 the path loss will decrease. The 747 on track for Eldon Weir crosses the Canberra to Frankston line much closer to Canberra than to Melbourne. This is not counteracted by any other factor, the signal from Canberra will be about 5.5dB or one 'S' point better in Frankston than that indicated in Aircraft Reflectors1.

d — In Aircraft Reflectors1 the examples of signal levels were based on aircraft as reflectors equivalent in area to the aircraft's wings. This is the only uncertain parameter in the formula.

Obviously bigger aircraft are bigger reflectors and cause lower path losses but is the area A of a given aircraft equivalent to a flat sheet of the same area as its wings?

Persistent claims by amateurs who claim to have properly calibrated 'S-meters' indicate that the signal levels might be slightly higher than those given in the Aircraft Reflectors1 examples.

Furthermore theory indicates that the forward scatter cross section of even a sphere is greater than the backscatter cross section, so it may be that parts of the aircraft other than the flat underside contribute to the equivalent area and hence Aeff resulting in a reduction in path loss beyond that given in the Aircraft Reflectors1 examples.

Nevertheless, even if the equivalent flat sheet area is twice that assumed in Aircraft Reflectors1, the path loss will be reduced by no more than 6dB or one 'S' point on the examples given.

History
Reflecting objects such as ships and aircraft have been causing enhanced signal levels at receivers a considerable distance from the transmitter for as long as radio has existed. Reflections from aircraft were recorded in 1931 and a series of experiments were carried out, using among other things, a Ford trimotor and a transmitter on about 72MHz.

These early observations led to a system for the radio detection of ships using 'wave interference' equipment which later became known as "Bistatic Radar".18

Bistatic Radar uses transmitters and receivers a considerable distance apart (comparable to the target range) instead of at the same location (Monostatic Radar).

The system had disadvantages which caused it to be dropped in favour of Monostatic Radar, but not before it had been noted that one of its advantages was the dramatic increase in signal level which obtained when the transmitter, target and receiver were all in the same line-of-sight (LOS) configuration.

The system was investigated again in 1955, but again shelved. The point is that "Aircraft Enhancement" is Bistatic Radar. It is not new. The system parameters were worked out long ago and it all happened before the jet age. There is not much of a ball of hot air behind a ship or a Ford trimotor.

Conclusion
The Harrison article has been shown to be inaccurate, misleading and illogical. The enhanced signal levels, due to aircraft, are caused by reflection from the aircraft itself. Harrison's article fails to provide an alternative to this historical, well-documented, engineering fact.

NOTE: The forgoing arguments are clear and convincing, but do not eliminate the possibility of a hot air refraction mechanism also taking place. Clarification of the debate as to the relative magnitudes of reflection and refraction can only occur with the provision of much more carefully recorded data, particularly as regards absolute signal levels. Go to it, chaps! — Ed.

References
12. McNairn D VK3UEM, Personal Communications.

DIPOLE FORMULA
Putting up a dipole is probably a project undertaken by most radio amateurs at one time or another, but getting them to work is something else.

Text books give a formula for calculating the length of a dipole in feet as 468/frequency in MHz, but this doesn't do the trick according to Des VK3DES and Bill VK3DEX — who operate portable from Enochs Point, in Victoria. They cut a dipole for 14.2MHz one weekend using the above formula, and found it was too long.

Cutting and trimming it back using an SWR meter they finished with a shorter length of wire, which gave good results.

Dividing the length back, a new formula giving the length in metres as 138/frequency in MHz was found, and applying this to an 80 metre dipole, and then other bands, it worked out perfectly.

Des said that while the usual formula may work over a perfect ground plane or at a greater height, the 138 formula worked perfectly at a height of 4.5 to 7.5 metres above ground and no balun was needed.

At Enochs Point they use a combination 80 metre dipole and 40 metre inverted Vee, both cut to the 138 formula, without balun, and jointly feed with 50 ohm coax, which gives a 1:1.2 SWR.

The 40 metre inverted Vee has an apex angle of 120 degrees. The insulator is a toothbrush handle and ordinary PVC coated building wire is used. Technical Editor's Note — Length formula for dipoles are considerably affected by closeness to ground and wire sizes. Consequently they only serve as a starting point for adjustment. The formulae have been metric converted.

YOUTH RADIO
One of the latest amateur radio stations in China is BY1SK, located at the Xuanwu Youth Technical Centre in Beijing.

The Centre, which was set-up three years ago, is an after-hours institute where about 1000 students pursue subjects in extra-curricular classes ranging from oceanography to model ship-building.

One BY1SK operator is 13-year-old Zhou Ti, a sixth grade pupil. He spends two to three afternoons a week at the centre and has a good on-air operating technique.

BY1SK uses a TR-7 transceiver on CW and SSB, often between 0600 and 0900UTC.

About 50 students at the centre, aged between 10 and 18 years, are interested in amateur radio and shortwave listening.

QSL information for BY1SK is — Amateur Radio Station of Youngsters, Xuanwu District, PO Box 2916, Beijing, China.
introduction
Some of the pressures on repeater activities are obvious. In the more populated states, as more groups seek to gain licences for voice and special mode repeaters (such as RTTY and Packet) there is pressure on the increasingly crowded band space allocated to repeaters. Other pressures come from interference problems, as some repeater channels become subject to the high levels of RF found on the choicest sites. Still other pressures come from the regulating authority, the Department of Communications, as they seek to regulate the use of frequencies.

Repeater stations. While a voice repeater may be primarily designed to enhance the range of communication for a mobile station, the same does not apply to an ATV repeater! The DOC also noted how many amateurs use their innovative skills to design and plan new systems. The paper continues “Such activity should be encouraged, however it is essential that guidelines be formulated so that an orderly progression of the service is of course impossible to fully predict the eventual products of the amateur’s imaginative application of the electronic radio arts and according such guidelines should enable the amateur to permit expansion and encompass future technological advancements.”

There is then a need to clarify the use of repeater stations. While a voice repeater may be primarily designed to enhance the range of communication for a mobile station, the same does not apply to an ATV repeater! The DOC also noted how many amateurs use their innovative skills to design and plan new systems. The paper continues “Such activity should be encouraged, however it is essential that guidelines be formulated so that an orderly progression of the service is of course impossible to fully predict the eventual products of the amateur’s imaginative application of the electronic radio arts and according such guidelines should enable the amateur to permit expansion and encompass future technological advancements.”

The Wireless Institute believes that the justification or need for a repeater is a matter for the Licensing Authority to determine and not a matter for a value judgment by the Licensing Authority. The second point of concern, from paragraph 4.14 of the Regulations makes two comments on the use of repeaters that require examination. The first is that approval of the repeater/translator will depend on ‘the requirements of that particular area’. There does not appear to be any elaboration of this requirement. It may at first be construed as relating to the allocation of operating frequencies, in which case there can be a valid reason for ensuring that it complies with fully approved agreed band plans and also ensuring a reasonable geographical spread of stations operating on the same frequency. However, it could also be construed as applying to the ‘needs’ of the particular area. The corollary of this interpretation is that the Licensing Authority (the Department of Communications) could then be expected to take a value judgment as to whether another repeater was needed. For example, does a major capital city with seven existing two metre voice repeater need another one? Does a country town with one existing lightly used repeater need a second one?

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borders, where two, or more, states need to consider the implications of a particular proposed installation.

While the Wireless Institute has no objection to the Department of Communications considering these matters, it believes that in the first instance these matters should be considered by the Wireless Institute. This does not imply that the Institute will not support the standardisation of the many diverse groups which construct and operate repeaters.

The Amateur Service is an experimental service and repeaters are paid for by amateurs themselves. The requirements of amateurs for communication are many and varied, and the Wireless Institute believes that the ‘need’ for a repeater is a matter for the Amateur Service and not the Licensing Authority.

**Equipment Requirements**

The technology use of a repeater stations has undergone significant changes since repeaters were first introduced. This is evident not only in the radio frequency circuits, where advantage is being taken of the improved performance with state-of-the-art devices but also in the use of micro-processor control circuits. The Wireless Institute believes that this flexibility to use the latest propoer techniques is fundamental to the amateur’s ability to experiment.

Paragraph 5.11(e) refers to the need to automatically shut-down the transmitter of a repeater station on receipt of an input signal exceeding a specified time limit. While there is no objection in principle to this requirement, difficulties exist in specifying an appropriate time limit. A temporary loss of output of up to 30 seconds from a radio repeater would need to be considerably shorter than that for an ATV repeater. Also, the time out requirements for a busy capital city repeater may be quite different from those for a quiet country repeater. To avoid amending this paragraph each time a new mode repeater is introduced it would be better for the specified time to be left open, and the amendments to be left to the discretion of the Licensing Authority and the Wireless Institute.

The need for repeaters to identify themselves is covered in paragraph 5.11(g). A variety of techniques are mentioned as having been used to ensure that the repeater identification can be recognised by appropriately skilled and equipped operators. It is believed that broad guidelines only should be laid down, and that the repeater licensee be free to determine the most suitable and acceptable method. For instance, voice identification should be permitted for voice repeater, ASCI identification for ASCI repeater, and Baudot or ASCII identification for Baudot repeaters.

While recognising the responsibility to use the whole of the radio frequency spectrum in a responsible way, it must be remembered that substantial improvements in service can be brought about by the latest commercially available test and measurement equipment. Thus, to impose the same technical standards on amateur equipment, as are imposed on commercial equipment, may result in insurmountable difficulties being placed in the way of some repeater licensees.

Accordingly, the Wireless Institute expresses strong reservations about the inclusion of a paragraph describing the construction of a repeater (5.11(b)) as being ‘of high standard and in accordance with good engineering practice’. In his view this is a desirable standard. As a minimum standard, what is the standard by which repeaters should be assessed? For example, a repeater should be tested fairly and impartially, a set of standards would be needed. Use of commercial standards may pose difficulties in the light of the comments in the previous paragraphs. The Wireless Institute has no desire to see equipment with poor constructive or operational characteristics being used in the Amateur Service, but believes that the points raised in the preceding paragraphs should be further discussed with the Department of Communications.

**Conclusion on a non-commercial basis**

Amateur repeater stations have on occasions been required to be turned off when interference has been caused to them from nearby commercial systems. The Wireless Institute believes that it makes clear any interference to amateur repeaters from other services shall be accepted, except where the interfering equipment is not operating according to Departmental specifications. Determining the origin and cause of interference to any radiocommunication service can be a time consuming process, especially on a site where many organisations provide varied services.

It is obvious that the reason behind this situation is the observation that amateur repeaters are built to a variety of unspecified ‘standards’ while commercial equipment is required to meet specific standards. Consequently, it is recommended that the issue of compliance with commercial standards for amateur equipment be discussed further with the Department of Communications on the basis that it be voluntary as far as the Amateur Service is concerned, and that having been shown to comply with the standards, a repeater be exempted from the restrictive requirements of paragraph 5.11(f).

Thus, the Wireless Institute or a repeater group could arrange for a specific repeater to be subjected to the necessary testing procedure, and where it is found suitable in the regulations. It is considered that repeaters located on prime sites serving large population centres would be the likely candidates for this procedure.

**Use of special access control techniques**

Various techniques are available to control the access to repeaters. These include key, code, security, channel control techniques, and other techniques, which are frequently used in commercial installations.

The techniques are usually used to minimise interference from spurious signals on the repeater input frequency, and to ensure that it is not possible to activate the repeater until a desired signal is received. While these techniques may be appropriate in a commercial environment, the Wireless Institute believes that use of these techniques should be left to the discretion of amateurs.

**Cross linking of amateur repeaters**

Multi-mode repeaters represent an efficient use of repeater hardware and the frequency spectrum. There should, therefore, be support for such devices where the modes are considered compatible.

**Cross linking of amateur repeaters**

As indicated in the opening section of this paper, repeaters are an enhancement of the amateur service. There are many ways that this technique can be used to bring new techniques and new modes, and by expanding considerably the service area of an existing repeater. A typical example of the last point is the expansion of the amateur satellite service where VHF/UHF contacts halfway round the world are now possible.

One technique for expanding the service area of a repeater is to link it to another repeater. This could be done for a variety of reasons — to carry a new mode of communication, to provide coverage from an isolated country area back to a neighbouring town or city, or to link a population centre with its nearby recreational area.

The Department of Communications for three particular instances of cross linking on a trial basis. These are:

- *Tasmania* — link to relay WIA broadcasts.
- *Western Australia* — link city and country ATV activities, and
- *Western Australia* — link city and country voice repeaters where the country repeater serves an isolated community.

**Guidelines for Repeater Cross-Linking**

The Wireless Institute believes that cross-linking of repeaters should be supported provided that the implementation of cross-linking should be consistent with the aim of enhancing the Amateur Service.

The following points are offered as guidelines for the licensing of linked repeaters irrespective of mode:

(a) Each repeater in the linked group is to be licensed individually according to the normal repeater licensing requirements. The cross-linking is to be subject of a separate application. Further, approval may be sought for any or all of the applications.

(b) Cross-linking of repeaters will not be permitted where such an arrangement allows an interference to any signal on a band on which it is not normally permitted to use.

(c) Cross-linking may be either permanent, where all transmissions are cross-linked, or temporary, where only specific purposes, where only specific WIA news broadcasts of WICEN activities are cross-linked. If the cross-linking is for a temporary specific purpose, then it may be approved for a specified period and subject to the conditions as indicated.

(d) The traffic and interconnecting signals for linked repeaters are not to be carried in the same amateur band. If it is preferred that this band be a higher frequency band, it is noted that propagation characteristics of a transmission, and thus the link, may require the linking to be done on a lower VHF/UHF band. Further, the link frequencies used must be in accordance with an approved Wireless Institute Band Plan.

Cross-linking of repeaters for a temporary specific purpose; eg a Wireless Institute Broadcaster, will be permitted to use ‘off-air’ signals for ‘in-air’ signals. Where the cross-linked repeaters are in different states, then approval of all the relevant WIA Divisions is required.

(f) Cross-linking of multi-mode repeaters to be cross-linked where simultaneous emission is allowed shall be three. Where the received traffic is stored before retransmission, eg in RTTY or Packet mode transmissions, or where repeaters may be selectively added to the link, then this limit does not apply.

(g) All ATV repeaters and links shall use vestigial side band emissions only for picture signals.

It is noted that further mode specific conditions may need to be applied from time to time to accommodate difficulties that are being encountered or are foreseen.

**Conclusions**

The Wireless Institute believes that the present approach by the Department of Communication to Amateur Service repeaters and translators is generally satisfactory. This is shown by the ever increasing number of new sites being placed into service by the amateur fraternity.

However, there are a number of points arising out of the new regulations which require further discussion and consideration. Accordingly, the Wireless Institute makes the following recommendations:

1. That the justification or need for a repeater is a matter for the Amateur Service to determine.

2. That the Wireless Institute develop and publish guidelines for the national operating standards of various modes of repeaters as required.

3. That the Federal Executive coordinate repeater license applications in accordance with the Wireless Institute Band Plan.

4. That the Wireless Institute develop a set of maximum time-out periods for various modes and locations of repeaters and other technical standards where necessary.

5. That the Wireless Institute discuss further with the Department of Communications the effects of ensuring amateur repeaters meet specified national standards on the expansion of amateur services.

6. That the guidelines proposed for the cross-linking of repeaters in the Amateur Service be approved.

If the above recommendations are accepted by the Department of Communications, then the enhancements they permit to the amateur service repeaters will allow amateurs to continue to experiment with new technologies, and to provide valuable community service in times of need.
THE NEXT STEP
Complete copies of Issue 3 of this paper have been circulated to all Divisions of the Wireless Institute. It is currently undergoing its final refinement, pending its presentation to the 1986 Federal Convention in April 1986. Any comments or suggestions should be made as soon as possible, either to your Divisional Technical Advisory Committee or to FTAC. This will enable them to be considered prior to the printing of the next edition. It is not until the convention has considered this paper and voted to accept it, either in part or in full, that it will become WIA policy.

FROM IONOSPHERE TO DEEP SPACE
I am very honoured to participate in the General Assembly of the International Amateur Radio Union Region 3 and to bring you greetings of the 160 Member States of the International Telecommunication Union — the ITU. I am pleased to see radio enthusiasts from many countries present here in this beautiful city of Auckland.

The choice of venue for this year's conference I believe is especially appropriate, being situated in a country which has a remarkable record of contributions to the development of international telecommunications and which is encouraging radio amateurs to enjoy their hobby and to render service to the community. Amateur radio is, in fact, the only hobby provided for by international treaty, the Radio Regulations annexed to the International Telecommunication Convention.

The Radio Regulations define amateur radio as "a service of self-training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest". Radio amateurs belong to a group of devoted enthusiasts scattered all over the world. They have organized a network of radio communication that extends over the globe, probably the only system which can be correctly described as global. Amateur radio began back in the early days of the art, when radio was known as "wireless". At that time, there was no clear line of distinction between professional and non-professional, scientists, engineers, hobbyists — all were amateurs.

On 8th December 1864, six months before the suggestion of Professor James Clerk Maxwell (which in 1932 became the International Telecommunication Union), Professor James Clerk Maxwell read a paper before the Royal Society of London on "A dynamical theory of the electromagnetic field". One section of this paper entitled "Electro-magnetic theory of light" set out the classical equations describing the relationship between light waves and the travel of electromagnetic disturbances.

About a quarter of a century later, Heinrich Hertz succeeded in generating radio waves a few centimeters long and demonstrated their similarity to the shorter waves of light by their reflection and refraction properties. Within the next decade, Guglielmo Marconi in England, and Alexander S Popov in Russia, had started to use these waves for experiments in practical communication. When, in 1901, Marconi demonstrated the transmission of radio signals across the Atlantic Ocean, it became evident that there was a need for scientists to understand and explain the propagation phenomena associated with such transmission round the curved surface of the earth.

In 1907, voluntary investigators conducted circuit tests on short waves to demonstrate that stable communications were feasible on wavelengths below 200 metres. These pioneers soon had many disciples but the amateur field was quickly appropriated by people fond of tinkering with equipment and interested in picking up transmissions from large broadcasting stations. Investigation was not confined to the old world.

Innovators, driven by the isolation of distance in Australasia, were also very prominent. Indeed in the last few days, some of you participated in the commemorative function to recognise the 75th Anniversary of the Wireless Institute of Australia.

Amateur radio communication was thus involved in the exploration of the ionosphere. This reflection process was, at first, not very scientific. Curiosity did much to develop southern hemisphere radio research and information.

Once broadcasting was no longer esoteric, people seriously interested in research, those who claimed that they alone were entitled to call themselves "radio amateurs" — concentrated on the study of shortwave propagation.

In 1923, radio amateurs really came into their own. On 26th November 1923, the French station 2AB and the American station 1MO set up the first bilateral communication across the Atlantic. This was done on a wavelength of 100 metres, even though most amateurs did not believe transmission below 180 metres was possible. The shortwave radio cult began that day. Enthusiasts banded together in ever increasing numbers and with an ardour that frequently bordered on the fanatic.

In the early 1920s it was discovered that the long-distance radio transmission which had been observed ever since the start of radio were due to radio signals being reflected back to earth from the ionosphere. This reflection process was, unfortunately, not simple. It was not as if there were "radio waves". Their properties varied continuously rather like the weather with recurring patterns depending upon the time of the day, the season and the level of the sun's activity.

These variations affected different frequency bands in different ways and as a result of this it became necessary to share the high frequency bands in different categories of users such as the maritime services, broadcasting etc on a recurring basis through the spectrum so that each user category of service received a selection of frequency bands. This was necessary to provide a measure of autonomous communications.

The point I want to make in bringing this early history to your attention is that the systematic division of the radio frequency spectrum, as we know it today, stems largely from the use of space — the ionosphere by radiocommunications.

In this regard, major contributions were made by radio amateurs in conducting research in radio technique, and in the properties of the ionosphere with comparatively simple apparatus. Radio amateurs were thus involved in the exploration of space long before the material used with the help of rockets and satellites, and well before the International Radio Conference, held in Washington DC in 1927 which drew up the first allocation tables as a result of the high frequency part of the spectrum. Subsequent ITU radio conferences evidently refined and amended the allocations made in 1927. The general World Administrative Radio Conference in 1959, took a large number of decisions for better sharing of the frequency spectrum. The conference also laid down long-term guidelines for the optimum use of the radio frequency spectrum. It drew up a program of future specialised conference to deal with specific services.

Only a few weeks ago the First Session of the World Administrative Radio Conference on the use of the geostationary — satellite orbit and the Planning of space services utilising it concluded its work in Geneva. I am glad to know that, as was the case on the occasion of previous World and Regional Administrative Radio Conferences, the IARU had again sent a delegation of radio amateurs to Geneva to follow the proceedings of this historical and extremely complex conference in its search for acceptable means of guaranteed access to the geostationary orbit. I am sure, too, that they made new friends for amateur radio among representatives of ITU's Member countries.

Radio amateurs have built the series of OSCAR satellites and its successors and tried them out as social experiments. OSCAR was found feasible. Radio amateurs have served as a nucleus to bring about many advances in radio techniques and in the improvement of human relationships. This nucleus will grow in size and advance in level. Because they are amateurs, the only driving force is the desire to prove what can be done.
force urging the world’s more than 600,000 radio amateurs is their interest — interest in human contact and interest in improving their technique, which has as its ultimate objective the broadening of the sphere of this contact. It is a hobby which I should like to see introduced on a large level in as many ITU Member countries as possible. At the beginning of the electronic era many people are afraid of science and engineering, assuming they are difficult subjects beyond their grasp, but radio amateurs can show them otherwise by their own experience. Amateur radio clubs particularly in developing countries can interest laymen and young people in radio and, through radio, science in general.

I urge you to share your amateur radio knowledge with your friends, with youngsters of your respective countries and to transfer it to the youth generation of the many developing areas and countries of this vast Region 3.

ITU seeks your co-operation. Indeed, with the IARU we are arranging in 1986 a training course in the administration of the amateur radio service in Nairobi, Kenya, during September 1986 and on the eve of AFRICA TELECOM 86. We are exploring similar possibilities in Region 3.

Thank you once again for having given me the opportunity to address this meeting and to assure you of my continuing support. I am privileged to be the patron of the International Amateur Radio Club. Most of you have certainly had the opportunity to contact its international amateur radio station 4U1ITU at ITU Headquarters. You are welcome to operate this station whenever you come to Geneva.

In October 1987 the ITU is organising TELECOM 87, the fifth quadrennial World Telecommunication Exhibition and FORUM in Geneva. It is the world’s largest and most prestigious telecommunications event. Floorspace is available for an IARU pavilion. Why not make TELECOM 87 your rendezvous for an eyeball QSO with your friends from other parts of the world. Operate 4U1ITU from Geneva. If you cannot be with us in Geneva meet us on the air. Plan special amateur radio events to highlight TELECOM 87 now.

May I offer you my best wishes for the success of your noble efforts. Thank you Mr Chairman.

R E Butler
Secretary General
13th November 1985
Auckland

SUMMARY REPORT

This report is a summary of the main business of the Conference giving information of a general nature.

The Conference was convened in collaboration with the New Zealand Association of Radio Transmitters (NZART), the host society which arranged for all secretarial facilities required for the Conference at the hotel including tape recording of the whole proceedings of the meeting.

The participants were delegates of 10 member societies, viz ARRL, CRSA, JARL, KARL, MARTS, NZART, ORARI, PNGARS, RGB, and WIA, the President, Vice-President and Secretary of IARU and four Directors, the Secretary and Assistant to the Secretary of the Region 3 Association.

Proxies were held for BARL by RSGB, HARTS by ORARI, PARS by JARL, SARTS by WIA, PARA by NZART, and SARS by MARTS.

Both Region 1 and 2 were represented by their respective Presidents and Secretaries. The ITU was represented by R E Butler, Secretary General of the ITU.

Region 3 Directors’ Meeting was held on the day prior to the Conference to deal with a number of administrative matters.

OPENING CEREMONY

Terry Carrell ZL3QL, President of NZART, said that it was a great honour for New Zealand and NZART to host this Sixth Triennial Conference of the Region 3 Association.

Terry offered a special welcome to Chinese Radio Sports Association (CRSA) and Organisation Amateur Radio Indonesia (ORARI) as well as the other delegates. He noted with sadness the loss of W4KFC, HS1WR AND JA1NAT and asked those present to remember their efforts on behalf of amateur radio.

The Conference was formally opened by the Hon Jonathan Hunt, Post Master General/Minister of Broadcasting for New Zealand. Mr Hunt noted that this was the first International Radio Union Conference to be held in New Zealand and it was

the first Region 3 Conference attended by the Secretary General of the ITU.

Mr Hunt welcomed all the overseas delegates to the Conference. He noted that this was the first occasion that representatives from the People’s Republic of China had attended an International Amateur Radio Conference. He said that amateur radio has a proud and honourable tradition of service to the community and of keeping itself in the forefront of technology. Mr. Hunt noted that without goodwill the amateur service would have difficulty maintaining its allocations. In his view it was a measure of the success of the amateur service in New Zealand that it continued to grow; that it catered for the wide range of people from all walks of life and age groups.

Mr Richard Butler, Secretary-General of the ITU, said that he was very honoured to participate in the General Assembly of the IARU Region 3 and brought to the Conference the greetings of the 160 Member States of the ITU.

Richard Baldwin W1RU, President of IARU, thanked the Mayor and the Minister for his support of amateur radio. He said that such support was important because the New Zealand had been a staunch supporter of IARU since the very beginning and that this would continue for a long time. He also thanked the Secretary-General of the Conference giving information of a general nature.

The most necessary ingredient for radio amateurs was frequency allocations — to achieve these allocations amateur radio needed to be adequately represented and to participate in IARU Conferences.

Mr Hunt noted the vast improvements in the relationship between amateur radio and the ITU in the last decade.

Mr D Rose, Assistant Director General of the New Zealand Post Office, addressed the meeting. He noted the special licences which had been issued to delegates from countries, many of which do not normally have reciprocal agreements with New Zealand. He said that New Zealand was proud to have helped to achieve a high status for radio amateurs around the world by its support of amateur radio Conferences. He wished the delegates a successful Conference.

The Minutes of the Fifth Regional Conference, held in Manila in 1982, were received and adopted. The reports submitted by the Secretary, individual Directors and member Societies were noted. In addition, the reports of the Region 1 and Region 3 Secretaries were noted. It was that of the President of ITU.

RECOMMENDATIONS AND ACTION

Working Group No 1 was set up to "review band plans previously adopted by the Association having particular regard to the 28MHz band and the position of Packet Radio, and other special modes, in any band plan and to recommend band plans as considered appropriate for the HF, VHF, and UHF bands".

Band plans were prepared and approved for 7MHz through to 1296MHz.

The Directors of Region 3 meet (from left) Keigo Komura JA1KAB, David Rankin G7ZAT, QSL Manager, and Jumbo Godfrey ZL1HY, Masayoshi Fujikora JMLUXU, and Michael Owen VK3KI.

Photograph courtesy BREAK IN
Concerning the 10MHz band, it was agreed that IARU Societies be encouraged to negotiate with their administrations for the use on a local non-interference basis of the 10.150-10.200MHz band. In order to indicate the need to administrations for the expansion of this band on a more permanent basis to meet the needs of the amateur service. All Societies were encouraged to take appropriate action to ensure that the transfer of the WARC 79 bands were completed by 1st July 1989. In addition, where the WARC 79 bands were not yet allocated, to continue the work necessary to gain access to these bands.

Working Group No 2 was set up to “draft one or more resolutions as are considered appropriate to express policy in respect of the following general areas:

1. participation of the amateur service and the amateur satellite service in currently scheduled ITU Conferences and appropriate funding required.
2. the position or preparation of a position for the amateur service and amateur satellite service representation in respect of frequency and regulatory matters for administrative radio conferences, that could affect the services, and the advancement of the position of the services to include representation, and to prepare such purposes and participation in the activities of appropriate organisations.

VK3ADW (WIA) was appointed Convener, with ZL2AZ (NZART), W1RU (IARU President), 5V1RH (IARU AF/1 Director), and 9M2SS (MARTS) active as members.

Ideas brought up during the Working Group discussions included the following:

AMATEURS ON ITU DELEGATIONS — There are two possibilities,

1. an amateur who is part of a Delegation in his profession or job capacity. NOTE: such a person may be somewhat limited by the “modus operandi” of his leader and/or delegation;
2. An amateur financed by his IARU Society and who is officially included in the Delegation for representing the amateur service. NOTE: may be limited as in i above, but usually not to the same degree.

Possibility ii is the preferred situation to work towards, we recommend that Member Societies be encouraged to achieve this end.

PARTICIPATION —

1. In Preparatory Conferences — SPM etc
2. In the work of the CCIR.
3. At IFRB Forums that are open to the IARU.

PRESENT APPROPRIATE PAPERS IN THE ITU JOURNAL.

IDENTIFY POTENTIAL CHAIRMEN OF ITU WORKING GROUPS AT WARC/RARC and ensure that these people are fully briefed in preparation for the currently scheduled ITU Conferences. The second concerned a future possible General WARC and the development of goals and objectives. The third concerned the utilisation and continued maintenance of the Maidenhead Locator System, and the role it is expected to play in the future ITU Conferences. The fourth encourages the continuing participation of the CCIR in the IARU.

Five resolutions concerning these matters were passed. The first concerned the importance of the CCIR and IARU Regional Administrative Council participation in the ITU Conferences. The second concerned a future possible General WARC and the development of goals and objectives. The third concerned the utilisation and continued maintenance of the Maidenhead Locator System, and the role it is expected to play in the future ITU Conferences. The fourth encourages the continuing participation of the CCIR in the IARU.

The fifth concerned the Regional Administrative Radio Conference to “establish criteria for the shared use of the VHF and UHF bands allocated by the WARC 79 and MOBILE SERVICES in Region 3” sometime in 1987/88. And indicated that this conference may be of such importance that the highest level of participation from administrations worldwide support for the interests of amateur radio. The recommendations of the Monitoring System Study Group and the criteria for making appointments be included in the IARU Constitution and Bylaws of the IARU.

The resolutions were adopted by Region 3 Societies. It was agreed that the number of countries for the Gold and Silver endorsements be increased but the basic certificate qualification remains the same.

The IARU Region 3 Adoption, in principle, the Region 1 HF emergency procedure. A Study Group, initially consisting of six persons was set up to consider legislation for the amateur licence and amateur operation.

The Association formally thanked JARL for the publication of REGION 3 NEWS over the past three years.

Working Group No 4 was set up to “report to the CCIR on action, if any, that could be desirable for the Conference to take in relation to amateur satellites, having regard to papers submitted to the Conference”. Resolutions on involving amateur satellite coordination and financing were adopted by the Conference.

Working Group No 5 was set up to “provide a report to the Conference identifying the appropriate practice, which amateur radio can be encouraged and promoted by the Association and its Member Societies”, to provide assistance to developing countries.

It was agreed that a needs and resources available questionnaire be completed by Member Societies.

Member Societies will endavour to limit the use of special call prefix codes to national or international events or amateur radio events of an outstanding nature.

It was agreed that in addition to the “Human Language System” developed by JARL, the IARU (Region 1) International Locator System, often referred to as the Maidenhead Locator System, be adopted by Region 3 Societies.

Region 3 adopted ARDF rules based on the Region 1 rules. This matter will be reviewed at the next Region 3 Conference.

It was further agreed that Region 3 Member Societies encourage the promotion of ARDF activity in the Region, noting that it is an activity which should appeal to young people.

A Working Group has been set up to take account of the new Societies which have recently joined the Union, and the USA and UK possessions in Region 3. The Working Group involves the following resolutions:

1. The provisions relating to the appointment of the President and Vice-President of the IARU should be amended to put the procedures necessary for such an appointment beyond doubt.
2. The following resolution was passed. NOTING Resolution 84-3 of the Administrative Council inviting suggestions for improvement to the Constitution and Bylaws of the IARU. RECOGNISING that there is a real need for the improvement of the Constitution and Bylaws. RESOLVES to recommend the adoption of the amendments, set out in the copy of the Constitution and Bylaws annexed to this Resolution. The amendments were adopted by the Region 3 Conference.
3. The amendments were adopted by the Region 3 Conference.
4. The amendments were adopted by the Region 3 Conference.

From left: Fred Johnson ZL2AMJ, new Director IARU Region 3, Terry Carroll ZL3QL, Chairman of Conference and President NZART, and Pedro Siedeman YV5BPG, President IARU Region 2.

Photograph courtesy BREAK IN

Guy Minter VK4KZX becomes a magician assistant for magician Yutaka Kasahara at the JARL Reception.

Photograph courtesy BREAK IN
Region 3 a new co-ordinator for the Monitoring System in Region 3.

Concerning the International Beacon Project, it was agreed that the Administrative Council be asked to encourage, co-ordinate, and arrange—advice to member Societies on the procedures for reporting the reception of beacons on a regular basis; the dissemination of changes in beacon status. Suggestions are by courtesy of ARRL through W1AW Bulletins and by regional journals: a world-wide beacon project and additional HF bands; a review of the present international beacon project in the 28MHz band with the view to converting it to single frequency beacons of the type used at 14.100MHz; in conjunction with NCDXF produce beacon control unit kits for sale to those Societies able to pay for them, and as gifts to those which cannot; greater publicity for and ask all amateurs (via National Societies) not to transmit on beacon frequencies; urgent consideration to these matters in view of the present condition of the sunspot cycle.

It was agreed that the Region 3 Secretary prepare, for the next Conference, a new contest schedule document in order to establish a contest calendar.

A Working Group was formed to advise upon contest segments for each amateur band. The Working Group would carry out its business by correspondence and report to the next Conference.

The Conference proclaimed 17th June as QRP Activity Day in Region 3.

It was agreed to implement the recommendation that Region 1 has recommended right-hand polarisation for 2.3GHz EME working.

The AX25 protocol was adopted as an interim schedule in order to establish a contest calendar.

The listing in September will not work in a Microbee because of a missing ABS command in lines 170 and 200. In the re-written version, the correct syntax is shown in lines 370 and 400.

There are a few enhancements, such as allowing the option to have a fixed, or user input source QTH, without having to modify the program before execution. Thus distances and bearings from anywhere to anywhere can be computed quickly and painlessly. Included also is the option of a hard copy with either parallel or serial printer output.

Fixed source QTH details must be entered on lines 280, 290, and 300 before operation. Default details for Carnarvon are given as an example.

As in the previous program, this one should be easily converted for any other machine.

The Conference deplored the use of radio frequency bands allocated to the Amateur Service by unqualified operators and unlicensed stations.

The IARU Administrative Council will be asked to develop a policy statement to draw the attention of all Member Societies and radio amateurs to the need to preserve standards for operator qualification and correct station licensing, and for the pressing of their concern to their licensing authority.

The Conference recommended the problems caused by DXpeditions.

Several procedural matters relating to the Region 3 constitution and regulations were amended to reflect present needs. The finance sub-committee produced three budgets, one based upon existing subscription rates, another which accommodated representation at all desirable ITU Conferences, and a third which was a compromise midway course.

This mid-course option was adopted leading to an increase in subscriptions of about 20 percent.

The location for the Seventh Conference was chosen by secret ballot as Seoul, hosted by KARL, following the Olympic Games in 1988.

The WIA delegation, David Wardlaw VK3ADW, Delegate Tanaka JR1ANP, Wally Watkins VK2DEW, and Guy Mintz VK4ZZX, acting as Observers, hold copies of the Conference papers and are available for further consultation by members.

Plan for UHF Television

The Federal Government has decided that the ultra high frequency band (UHF) will be used by all new commercial television services in regional areas. And the Wollongong station WIIA will move to UHF in 1989, to make way for the development of FM radio services.

The use of UHF rather the VHF is part of the Government's plan to bring more commercial television services to regional areas. Congestion of the VHF band has meant that extension of television is only possible through UHF.

In most cases, existing commercial services and the ABC will continue on VHF which gives a mixture of both VHF and UHF UHF is used in the UK, Europe and the USA.

FROM LEFT: David Wardlaw VK3ADW, Judy Wardlaw, Shozo Hara JA1AN and Junko Tanaka JR1ANP.

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This paper is intended as a starting point for dialogue and discussion for overcoming the downturn in amateur radio and to ensure its long-term survival. The current level of youth involvement is extremely low. In the 21-35 age group it is lean and downturn in amateur radio and to ensure its long-dialogue and discussion for overcoming the current stagnation, and increase youth, adult, and the hobby, similar to the successful Japanese giving VHF/UHF/Multi-modes.

There has never been a serious exploration of all possible ways to increase amateur radio's attractiveness and relevance in an increasingly, technically educated and stimulated people in our community.

Increasing the hobby's attractiveness

All possible avenues of greater participation in our hobby and ways to make it more relevant to a younger audience of which could be explored to ensure its long-term well-being. The hobby needs to be made meaningful for a whole new untapped generation of computer hobbyists, which includes large numbers of teenagers and primary school children. At the same time it should have increased attractiveness to the growing number of technically educated and stimulated people in our community.

Amateur radio needs to be both more dynamic and relevant to the computer, information technology, and satellite communication age for it to attract the new generation of computer hobbyists, technicians, and engineers. Among these people are innovators and experimenters who would be an asset to amateur radio.

The emerging computer technology should be married to amateur radio for the fullest possible benefit of the hobby. However, the current novice licence, with its operating privileges, is neither attractive, nor the most effective enticing way to computer hobbyists, nor very attractive to the technicians and trainees in various electronics related fields.

Computer hobbyists cannot use their computers on the novice amateur bands — and technician-types see the Novice (in fact, some wrongly perceive amateur radio generally) as only a voice hobby medium similar to CB radio. The present licensing system does not give them suitable entry points.

Computer hobbyists and communications

Computer hobbyists are showing an increasing interest in digital communications via radio. It is not just the trend but the evidence of this. In the April 1983 issue of ETI, I published a project contributed by Tom Moffat (VT73) — the ETI-733 Radio Teletype-to-Computer Converter. This was a receive-only project designed to attach to the parallel I/O port of the Microbee. Frankly, at the time, I regarded it as a special interest project and to late 1984, something in excess of 3000 were sold! (Judging from actual sales figures of the PC boards). Such sales put the project in the 'good seller' category. Of the feedback received on this project, a high percentage was from non-amateurs.

In the September 1983 issue of ETI, I published another project by Tom Moffat's, the ETI-736 FAC decoder (also based around the ETI-733). The time I made it the feature project. The result was similar. Again, a significant proportion of reader feedback came from non-amateurs.

The feature project of the first issue of AUSTRALIAN ELECTRONICS MONTHLY was the "Listening Post" (AEM3500), once again by Tom Moffat. This was a simple make at decode Morse/RTTY and FAX. Kit retailers reported this is the most popular of the AEM projects to date, bar none, even exceeding the success of the earlier ETI projects.

Whilst I haven't attempted to collect comprehensive reader feedback statistics I would say the non-amateur feedback exceeds the amateur or communications enthusiast feedback. With this project, the demands for us to publish software for computers other than the Microbee has been staggering.

When a school function in mid-1984, my wife and I got talking to another parent and we discovered his boy and our two boys had an interest in computer communications. (No surprise there — they were boated computer enthusiasts). He invited us to his telephone 'contacts' via modem just that week and (having only recently obtained a modem) suggested our boys arrange contact. Telephone hum changed.

Now doesn't this have a familiar ring to it? (Pardon the pun.)

My eldest son and I have run up a variety of bulletin boards around the country on occasion, and we are Viatel subscribers.

One thing we have noticed — it can be murder trying to get onto popular bulletin boards and Viatel some days in the afternoon after schools out (ie between 4-6pm). I don't know how frequently the bulletin board 'mailbox' facilities are used, but from asking around they are popular and non-amateur. That is, unless either a social, governmental or technological barrier prevents further growth.

The inevitable course of technological hobbies is for the hobbyists involved to gradually advance their knowledge and techniques and the expand their fields of endeavour. That is, unless either a social, governmental or technological barrier prevents further growth.

On that basis, it seems to me that computer hobbyists, taken as a group, will find packet radio, RTTY, AMTOR, FAX, ATV and digital satellite communications involved at some stage. Certainly, the evidence is there that some at least have already evinced an interest in a few of these areas.

HAS AMATEUR RADIO A FUTURE WITHOUT EMBRACING COMPUTER TECHNOLOGY?

Put yourself back to the immediate post-WWII era (hindsight has 20-20 vision, remember, when even amateurs with 600Hz FM radios reached their zenith. Re-coach that question to: "Is there a future for amateur wireless if it fails to embrace vhf packet radio?"

Technologies appropriate to solving technical or technological imperatives have always been adopted in groups of technical people where freedom to choose the appropriate technology has been available. Witness the adoption of SSB by the amateur fraternity. It was adopted owing to pressures of a technical imperative - overcrowding on the HF amateur bands. Indeed, the amateur serfdom was the first communications service in the world to wholly adopt SSB as a communications mode where it was most necessary.

Take a case closer to home: the Australian VHF/UHF repeater system. Repeaters sprang up among radio amateurs within the latter half of the 60s. Now, however, because the early amateur repeaters on-air were initiated by disparate groups in widely separated areas, no common technical standards regarding actual frequencies, airband, and frequency spacings were set down prior to their establishment.

That was the 'experimental' phase. When they began to proliferate and demand for more repeaters arose, a technological imperative forced a change on the status-quo and nation-wide standard channels and input/output spacings were subsequently initiated.

It is our contention that amateurs will face a number of imperatives, both technological and social, in the not too-distant future and computer technology is something in the immediate imperatives which we must face. This is part and parcel of a larger subject on what the future holds for amateur radio, a subject on which VK2ZTB has written for over a year. We are not the only amateurs, and other amateur groups, for some three years now. (See "Amateur Radio and the Face of Change", ETI, May 1984)

We believe that the integration of the microcomputer into the amateur station will probably prove the catalyst that sparks off a new round of technological advancement within amateur radio. It may well happen (has been happening) in simple ways at first. The adaptation of the new to the old—Morse and RTTY operation being prime examples here. Packet radio is seen as the next step, but is currently curtailed or 'off' for various reasons (microprocessor system) is becoming part of the station 'system tools', aside from the communications process. Log-keeping and antenna control are but two simple examples.

BRIDGING THE GAP BETWEEN COMPUTER HOBBYISTS AND AMATEUR RADIO

The tentative framework for such a bridge already exists. An interest in computer communications is quite strongly evident among computer hobbyists as a whole. There are several computer models and the major customers of 'freelance' bulletin boards and non-business, free access data-bases. As evidenced earlier, magazine projects which make radio communications available to home computers are among the most popular items sold by electronics kit and component retailers and a significant proportion of the purchasers of such projects are non-amateurs.

We believe that bridge should be 'built' from both sides. That is, on one side amateurs should be encouraged more to embrace computers and computer technology and 'phone contacts' between them and other groups. That is, unless either a social, governmental, or technological barrier prevents further growth.

There is already considerable adaptation of computer technology among amateurs and suitable promotion (not just 'salesmanship') could accelerate this by bringing more attention to the whole amateur radio project are non-amateurs.

On the other side, the amateur radio fraternity could promote itself among computer hobbyists. A small number of radio amateurs run bulletin boards on computer hardware. Articles in computer hobbyists publications on computers-communications from a radio amateur stand-point provide another (ideal) avenue and good examples already exist.

HOW BIG IS THE TARGET?

We can get an idea of the size of the target audience — computer hobbyists — by, firstly,
achieve the AOCP — while also attracting many otherwise, due to various reasons, could not. 70 percent who have upgraded. This grade of stone to the AOCP — as shown by the estimated amateur radio If the starting level had been the licence has given, for the first time in Australia, a provision an entry into the hobby for many of those initially attracted to CB radio who were not otherwise have taken the step towards radio if the starting level had been the AOCP.

The Novice licence gives a direct stepping-stone to the AOCP — as shown by the estimated percentage of those entering the hobby via this licence who could truly be a part of amateur radio opens up a whole new world to beginning experimenters can advance the radio art. The hobby can play an important part in our present-day society. With increasing leisure time it is an ideal pursuit for all age groups.

SUMMARY SO FAR
1 The Current Novice-to-AOCP progression is not suited to the potential target group. 2 Amateur radio has much to offer computer technology hobbyists who are technically involved people but the current entrance step, the Limited licence, is a disincentive because of the quantum jump in technical radio knowledge needed.

Q: What are the progressions from the Intermediate licence grade to the Novice?
A: Segments, or all of the 144 and 432MHz bands, with power levels similar to the current Novice limits, and all modes. An adequate delimitation must be made to encourage upgrading to the Limited licence.

Q: What are the progressions from the Intermediate licence grade?
A: Through the theory exam to the Limited, or sidewalks through the CW exam to the Novice.

RECREATIONAL AND EDUCATIONAL ROLES OF AMATEUR RADIO
The hobby has been a part of our present-day society. With increasing leisure time it is an ideal pursuit for all age groups.

A TELEPHONY BEGINNERS LICENCE
This licence has been deliberately separated from the following to accommodate a Novice enhancement and a new multi-mode Intermediate VHF/UHF licence to avoid confusion between the different concepts, but it fits in with the theme of this discussion paper for more entry points into the hobby.

A Telephony Beginners licence should be introduced to give access to the hobby using segments of the 144MHz and 432MHz bands. The theory syllabus could include elementary subjects at a Novice level, without HF and telegraphy specifics, but VHF/UHF specifics. Candidates would be tested to show understanding at the Beginner grade, or with CW to the enhanced Novice. This licence grade would be attractive to raw beginners who could truly be a part of amateur radio starting with a simple step of a stair climb with the help of the AOCR.

In Japan, a telephony licence has been responsible for introducing thousands of new hams into the hobby. 

A Telephony Beginners licence would easily fit into school curriculum as an elective subject and could better used.

Students at schools with an amateur radio station, by talking over the air-waves, develop their speaking, communicative and other life skills.

RESTRUCTURING THE LICENCE SYSTEM
The authors of this discussion paper feel a restructuring of the licence system is needed. This can help individuals to make a contribution to the advancement of technology they will fail to reach world markets due to their uncompetitiveness.

A community grass-roots awareness of technology is one benefit from amateur radio. The development can result from involvement in their work-place by more easily adapting to new technology, or by suggesting ways it could be better used.

As part of the education system amateur radio can be used to teach in a practical sense a number of subjects. These include mathematics, science, social studies, geography, and other subjects.

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supported by the ARRL — see appendix 1).

3 Introduce an Intermediate (Digital) licence with enhanced Novice-type privileges on VH/UHF.

4 Remove the 'defined mode' restrictions on the AOCP and LAOCP to permit experimental freedom with 'new' transmission modes. Increase the power output limit. Permit unattended operation by AOCP and LAOCP licensees.

With regard to 4, experiments with 'new' transmission modes, whether currently invented or yet to be devised, would be encouraged. The only limitations necessarily imposed would be those that may be required by the ITU or local DOC in certain portions of the spectrum and by 'gentleman's agreement' within the amateur fraternity. In other words, what we did in-band would be totally 'our business', provided out-of-band emissions met the appropriate standards (as now more-or-less exists under the new Radiocommunications Act). Unattended operation (remote control of a station) would be an integral part of the experimental, public service, and emergency communication aspects of the hobby.

With regard to 1, 2, and 3, this may pave the way for a market for locally manufactured transceivers.

![Diagram of Restricted Licence System Block Diagram]

ARRL PUSHES FOR YOUTH, EXPERIMENTATION AND GROWTH IN AMATEUR RADIO THROUGH NEW NOVICE PRIVILEGES

The ARRL has proposed that US Novices be given increased privileges. Currently they are confined to CW on HF, but the ARRL wants them to have phone, digital modes, repeater access, 220 MHz and a segment of 1.2 GHz.

Support for this 'Novice Enhancement' among ARRL members was four to one in favour.

Resistance to granting Novices SSB came from those in fear of CB-type operation being transported in the amateur radio service.

But this resistance was fading away because of the experience (exposure) US radio amateurs had when working many VK/Novices on 10 metre phone during the last sunspot cycle peak.

Some of the points put forward by the ARRL in support of increased Novice privileges are currently the same as developed by the authors of this paper prior to awareness of the ARRL suggestions.

ARRL Executive Vice-President, David Sumner K7IZ (editorial QST July 1985) said: "By giving beginners (Novices) the chance to hook a home computer to a amateur rig, we can tap a promising source of prospective radio amateurs."

"Making the Novice licence relevant to the interests of young people is an essential step if the amateur radio service is to continue, in future decades, to fulfill its basis and purpose."

"The majority of today's Old Timers started in amateur radio when they were teenagers, or younger."

"This early opportunity for hands-on experience with telecommunications technology and concepts shaped many careers and interests in later life, which in turn has benefited the nation immeasurably."

"The particular privileges being proposed for Novices represent a balance between a number of conflicting considerations.

"Ten metre phone and data privileges will permit Novices to pursue these activities... but are not so attractive as to discourage upgrading."

"We envisage 10 metre gateways to the packet radio market network, to permit Novice participation in this burgeoning activity."

"The sooner we can make amateur radio more attractive to newcomers, without compromising the entrance requirements which are so important in maintaining a quality service, the sooner the future of amateur radio will be assured."

DEMOGRAPHICS OF AUSTRALIAN RADIO AMATEURS

Many of today's Old Timers started in the hobby when they were teenagers, but the number of teenagers in the 1980s is very low.

Of course, this situation is due to more than one factor, but an increase in the attractiveness of amateur radio to a wider range of age groups as proposed in this paper will see increased teenage participation.

A 1984 survey of WIA members showed the following demographics:

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 20 years</td>
<td>1</td>
</tr>
<tr>
<td>21—30</td>
<td>8</td>
</tr>
<tr>
<td>31—40</td>
<td>20</td>
</tr>
<tr>
<td>41—50</td>
<td>18</td>
</tr>
<tr>
<td>51—60</td>
<td>23</td>
</tr>
<tr>
<td>60 and over</td>
<td>29</td>
</tr>
</tbody>
</table>

The survey sample was 5,000. Those aged 50 or over represented 52 percent while in the 30 or under age group it was a mere nine percent.

Compare this with the demography of Australia's population, as depicted in the following Australian Bureau of Statistics graph. On a population basis there are many more people in the 30 or under age group, and fewer, 60 and over — the reverse of the radio amateur demographics.


OBSERVATIONS ON THE IMPACT OF COMPUTERS

They are increasingly part of the school curriculum from as early as second grade primary. Short introductory classes and more in-depth courses on computers are very popular because so many people have a thirst for computer technology knowledge.

More than 40 magazines dealing with computers are available in Australia at newsagents — general electronics magazines also contain computer technology articles.

Sales of computers for domestic use are increasing, due to falling prices. They are gradually becoming either a necessity or convenience for education/training, and for modern data life-style serving the masses. Micro-computer clubs have emerged to provide a forum for the interchange of ideas and knowledge. They are self-help groups — much in the same way as the amateur radio fraternity traditionally has been.

A revolution is clearly evident in which mechanical operation is being replaced with new technology. Industry recognises it has to adopt new technology to survive.

Conversion of the keyboard written word into synthesised speech has reached a sophisticated stage. Digital storage of speech, is existing technology. Readily converting ordinary human speech into the written word is a reality, practical applications are not far away.

Digital developments in communication and information systems are at the frontier of technology and experimentation.

The AUTHORS:

Jim Linton VK3PC, has been the Victorian President and Public Relations Officer of the Wireless Institute of Australia for three years. An interest in shortwave listening and amateur radio saw him join the WIA as a Junior Associate, in 1962. Obtaining a Novice licence eight years ago, and immediately upgrading to obtain the AOCP from which he has been earlier divorced. A student for 10 years, his special interest is promoting the hobby.

Roger Harrison VK2ZTB, began as a shortwave listener in the NSW Division in 1982, and moved to the Victorian Division in 1983. First licensed as VK3ZY, in 1963. Written extensively published articles both locally and overseas. Twice winner of the Higginbotham Award for the WIA's AR magazine. A professional technical journalist since 1976, he has edited the WIA's AR, AUSTRALIAN ELECTRONICS TODAY, WIA INTERNATIONAL and now AUSTRALIAN ELECTRONICS MONTHLY. Special interests include VH/UFH techniques, propagation and 'Technology in the Future'.

Work on this paper began in early 1985 and was completed on 7th December 1985.
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AMATEUR RADIO, February 1986-Page 17
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Richard VK3KCP.

Keith VK2DNA.

Margaret VK3DML.

Neil VK3XNX.

Adrian VK3DAW.

Brenda VK3KT.

Ron VK2EFJ operating and Dave Waters of LROC taking a message.

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A Call to all
Holders of a

AMATEUR RADIO, February 1986-Page 19
Band Planning for the High Frequency Bands

A previous article discussed the philosophy behind band planning but deliberately raised only a few of the wider considerations requiring resolution by the amateur community.

This article, devoted to consideration of the high frequency amateur bands, considers the issues arising in some detail and presents draft band plans, in pictorial form for consideration, comment, adjustment and finally endorsement by Australian amateurs.

Before considering each particular band, the concept of an overlay band plan should be explained. We commence with the amateur allocation as a slice of the total electromagnetic spectrum, as shown in Figure 1a. This allocation can be divided into a telegraphy-only segment and a joint telegraphy/telephony segment. For ease of definition let us call these the CW segment and the CW wide band mode segment. Note that our basic Gentleman's Agreement; that CW is permitted across the full band allocation whilst the wide band mode has a narrower allocation; is preserved by layering the wide band mode segment on top of the CW allocation as in Figure 1b.

Within this basic division provision can be made for varying bandwidth requirements, again built up as layers on the original CW wide band delineation. Narrow band band modes appear as a subdivision of the CW segment and effectively reduce the CW only allocation through super-positioning as shown in Figure 1c.

Finally, the band plan can be developed further by addition of yet another layer devoted to specific application considerations, such as weak signal working, beacon bands, FM simplex, and repeater allocations. These are demonstrated in Figure 1d.

Development of an Overlay Band Plan — The stages in the development of an overlay band plan are shown diagrammatically below. NOTE: This is for illustration and does not resemble any band (perhaps it is nearest to 144-148MHz).

Before proceeding, it is necessary to establish some definitions applying to modulation mode bandwidth. The WIA Call Book states that:

"The following terminology has been adopted for the purpose of the Australian Band Plan:

1. CW Only
2. Narrow Band Modes (other than CW) — for example occupying bandwidths less than 2.5kHz such as ASCII, Baudot (RTTY), AMTOR (ARQ FEC) and Packet Radio.
3. Wide Band Modes — such as for example SSB, FM, FAX, SSTV, and data transmissions at greater than 300 Baud."

By contrast, the IARU bandwidth interpretations are:

a. Phone operation includes SSTV, FAX, and modes with similar bandwidths not exceeding 6kHz.

b. NB designates narrow band modes including CW, RTTY, Packet Radio, and modes with similar bandwidths not exceeding 1kHz.

c. WB designates wide band modes including FM.

The WIA Call Book definitions have been used for the remainder of this paper, even though they may require updating.

The term "exclusive allocation" indicates a single allocation to the Amateur Service in Australia. It does not take into account assignments which may be made in other countries to other services (the 7.000-7.100MHz and broadcast station problem is an illustrative example).

Having set the scene by explaining the overlay band planning approach, it is time to turn to specific considerations. In the HF band plans that follow, very few features are new or innovative, but a few do aim to clarify current misunderstandings. The basic CW wide band mode delineations are generally not altered, except perhaps by the insertion of a narrow band segment. The amateur band status, as indicated by the Australian Table of Frequency Allocations, is also included for information at the foot of each figure.

The 7MHz band is shown in Figure 2. Again, the narrow band mode segment is layered between the CW only and CW wide band allocation at 2.450kHz, 3.020kHz, 3.475kHz, 3.795kHz. This provides minimum intrusion into the Australian novice segment, yet is adjacent to the Region 1 teletype allocation of 3.580 to 3.620MHz. As yet, Region 3 has not produced a plan for this band.

The 14MHz band has traditionally been the international DX band, the band usage plan is shown in Figure 6. Note that the narrow band mode segment sits between the CW only and CW wide band segments. Its lower end at 14.075MHz accords with the Region 3 band plan and it aligns approximately with the Region 1 lower limit of 14.075MHz. The upper limit extends to 14.100MHz minus the guard band for the beacon on that frequency. The International Beacon Project (IBP) has a world wide series of beacons on the common frequency 14.100MHz and an
appropriate guard band of ±500Hz in Region 3 is allowed about that point.
Identification is by a time division process, each beacon having its own allocated radiation time interval. Two commonly used calling frequencies for wide band modes (SSTV and FAX) are also indicated on the figure.

---

**Figure 7. 18MHz**

Another of the WARC 79 bands, the 18MHz band is shown in Figure 7. Here the band plan mirrors the Region 3 plan and Region 1 plans but note should be taken of the number of spot frequencies which Australian amateurs must avoid until this band becomes an exclusive amateur allocation in the, we hope, not too distant future.

---

**Figure 8. 21MHz**

The second international DX band, 21MHz, is shown in Figure 8. Here the narrow band mode segment follows the Region 3 plan and has been overlaid on the CW only segment, (as determined by earlier Gentlemen’s Agreements) to achieve coincidentally a total overlap of the Region 1 allocation, yet avoid intrusion into the quite narrow

---

**Figure 9. 24MHz**

The third WARC 79 band, 24MHz, is shown in Figure 9. Once again the Australian band plan mirrors the Region 3 and Region 1 plans to avoid frequency allocation. A single spot frequency must be avoided by Australian amateurs until this band also becomes an exclusive allocation.

---

**Figure 10. 28MHz**

The largest amateur HF band is the 28MHz band, shown in Figure 10. There are a few international implications to planning the use of this band, in particular, the existing beacon sub-band from 28.200 to 28.300MHz and the satellite downlink sub-band from 29.300 to 29.510MHz. Here again the narrow band mode segment aligns with Region 3 and Region 1 and is overlaid on the CW only segment.

The proposed International Beacon Project sub-band of 28.190 to 28.200MHz will contain a primary world-wide time-sharing system on 28.200MHz and a series of secondary continental time-shared systems in the remainder of the sub-band. Australia should anticipate one primary beacon and up to ten secondary ones. It is proposed to clear the existing 28.200 to 28.300MHz beacon sub-band by 1st January, 1990, this will free up band space for Australian amateurs. Unfortunately, the lower limit of the beacon sub-band overlaps the narrow band mode segment (a mode not available to novices for transmitting) but despite these constraints, a clear 400kHz is left for novice CW only operation from 28.200 to 28.300MHz, as well as a CW only segment.

As yet no allocations have been planned in Australia for channelised FM repeater operations at the top of the band as there has been little demand for it. Never the less, at the peak of sunspot cycles, international contacts occur and an allocation aligned with Regions 2 and 3, namely 29.510 to 29.700MHz may be prudent planning.

Within Australia we are fortunate that DOC has adopted a most co-operative approach and permits a degree of self-regulation, much greater than in many other countries. For example, the US is constrained by legislation to frequency segments for differing modes; furthermore, those allocations vary with licence grade (and they have nearly double the number of grades we have in Australia). With such a large amateur population, the US has therefore materially influenced the development of a Region 2 Band Plan which is significantly different from the requirements of the other regions. This results in a closer alignment of Regions 1 and 3 Plans as reflected in this paper.

This paper has presented revised Australian amateur HF band plans and the reasons behind that planning, much arising from the recent IARU Region 3 Conference. The plans do differ in detail from the WIA Band Plans, as published annually in the Call Book.

It is now left to you, the amateur, to register your acceptance of these draft plans or to recall that planning, much arising from the recent IARU Region 3 Conference. The plans do differ in detail from the WIA Band Plans, as published annually in the Call Book.

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**REVERSE REPEATER FOR THE FT-480R**

After reading the article in August 1985 AR by Sam Pascoe VK6KSP on a reverse facility for the Yaesu FT-480R, the writer decided to implement these modifications to his own 480. It concerned him that the operation of the switches under the rig were a little messy and if the same function could be operated from the microphone, it would be much easier and quicker to select.

Sam’s lead was taken to see what control voltages were present on the wires around the satellite switch. The purple wire was disconnected from the satellite switch and, after due probing with the meter, it was found that the purple wire went low when the tone button on the microphone, or on the front panel, was depressed and the receiver shifted to the reverse frequency.

The green/white wire went low when the PTT switch was depressed and the receiver was shifted to the reverse frequency set by the offset switch.

If both PTT and tone are pressed simultaneously the normal function of transmitted tone is operational.

---

**Diagram of Modifications to FT480R for Reverse on-Tone Button. NOTE: Remove purple wire and connect via diode as shown above.**

---

**ANOTHER TECHNICAL EDITOR’S NOTE:** There appear to be some variations between FT-480Rs. Readers should check for differences. In this case the need for the pull-up resistor may vary between rigs.

---

**Russell Lemke VK3ZQB**

22 Villiers Street, Port Fairy, Vic. 3284
IARU REGION THREE BANDS PLANS

Ron Henderson VK1RH
171 Kingsford Smith Drive, Melba, ACT. 2615

At the recent IARU Region 3 Conference in Auckland, a Working Group was set up to develop Region 3 Band Plans. The report of that Working Group, which was adopted unanimously by the Conference is precised below.

The Basic Principles underlying the Region 3 Band Plans are:

a) In all cases of conflict between a band plan and the national regulations of a country, the latter shall prevail.

b) Nothing in these band plans shall be construed as prohibiting different national arrangements, provided that harmful interference is not caused to stations in the countries operating in accordance with the regional band plan.

c) Notwithstanding item b above, member societies of Region 3 are strongly urged to use these regional band plans as a basis for their national band plans.

Plans were developed for the bands from 7MHz to 1300MHz inclusive and are shown in graphical format. In interpreting these band plans, the following notes apply:

a) Phone operation includes SSTV, FAX, and modes with similar bandwidths not exceeding 6kHz.

b) NB designates narrow band modes including CW, RTTY, Packet Radio and modes with similar bandwidths not exceeding 1kHz.

c) WB designates wide band modes including FM.

d) Segments marked SATELLITE should be kept clear of other operating modes.

e) EME includes other weak-signal propagation modes, ie Meteor Scatter and Auroral Scatter.

f) Secondary at 7.100 to 7.300MHz means that amateur stations shall not cause harmful interference to stations of the Broadcasting Service.

g) When Packet Radio is used in experiments with which speech liaison is required on the same frequency, the phone segment will be used. However, where the transmission is narrow band only, eg bulletin boards, the NB segments may also be utilised.

h) In planning VHF/UHF bands only those activities which were of an international nature, ie intentionally radiated beyond a country’s boundaries, are required to co-ordinate within the Region.

Concerning the 1.8 and 3.5MHz bands, the Working Group recommended that the Secretary IARU Region 3 ask all member societies to submit their detailed band plans for these two bands prior to the next conference and that two papers be prepared, detailing current plans for each band. A Working Group could be established at the next conference to consider regional plans for these two bands. These plans will also support future WARC preparations.

The Working Group had no recommendations for bands above 1300MHz.

The Working Group recommended that societies consider the need for a narrow band at 190kHz for experimental purposes.

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Band — 7cm Amateur Band Element Number — 18 Frequencies Covered — 130-146MHz, Reflector Type — Grid type (four elements), Driven Element — Folded Dipole Directors — Parabolic (Dipole type), Input Impedance — 50 ohms VSWR — Less Than 1.3, Maximum Power — 220 watts, Polarisation — Vertical or Horizontal Gain over 1.6, Front to Back at Centre Frequency — 25dB, Side Rejection — Greater than 60dB, Half Power Beamwidth — 90 degrees, (Knots 30 degrees), Connections — Approx. 2m of RG213 Coaxial Cable & a “T” Type Female Plug, Wind Tunnel Tests: Boom & Element Construction — Aircraft Quality Aluminum Tube.

R F AEROSPACE SPECIFICATIONS... MODEL 208GR
Band — 2m Amateur Band Element Number — 8 Frequencies Covered — 140-156MHz, Reflector Type — Grid type (four elements), Driven Element — Folded Dipole, Directors — Parabolic (Dipole type), Input Impedance — 50 ohms VSWR — Less Than 1.3, Maximum Power — 100 watts, Polarisation — Vertical or Horizontal Gain over 1.6, Front to Back at Centre Frequency — 25dB, Side Rejection — Greater than 60dB, Half Power Beamwidth — 7 degrees, (Knots 30 degrees), Connections — Approx. 2m of RG213 Coaxial Cable and a “T” Type Female Plug, Wind Tunnel Tests: Boom & Element Construction — Aircraft Quality Aluminum Tube.

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AMATEUR RADIO, February 1986-Page 23
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VHF UHF — an expanding world

Eric Jamieson VK8LP
1 Quinns Road, Forrestdale, SA, 5233

Graham VK8GB, in Darwin, is included in the WORLD ABOVE 50MHz. Bill and I have been shuffling information backwards and forwards to one another for quite a few years, so from my point of view, it is pleasing to see the other man.

The VHF SCENE

Bill Tyan W3XO.

Graham has also enclosed a picture from his old friend, Hide JA4MBM, who sent several views of his mountain top antenna system, near Hiroshima. Graham comments: “You can see now what it takes to be Number One in the world on six metres! You wouldn’t catch me on top of that tower!” VK8LP wouldn’t be there either!

Details of the system are: Situated on Mount Naka at 750m, tower 90m high, mast is nine metres long and 114.5mm in diameter, stacking space 6.7m, boom diameter 80.5mm, and the antennas are the KLM 50-52-11 with a Emoto 1105Mx rotor. This system has given Hide a total of 76 confirmed countries.

Graham has included a photocopy of his log from his 1st January to 21st September 1985 and this brief summary will show just what we don’t get in the way of VHFs contacts by living in southern areas! 1/1/85 — 17 contacts to VK6; 16/1 — VK52XLZ; 7/2 — 2 x VK4; 2/3 = JA4MBM; 25/3 = 5 x JA; 3/4 = 37 x JA, plus JA6 and JH4 on 144.100MHz; 4/3 = 2 x JA; 5/4 = 19 x JA; 6/4 = V8XCT; 7/4 = 2 x JA; 8/4 = 3 x JA; 9/4 = 29 x JA on 144.100MHz and included JA4, 6, and 8 districts; also two were worked on 50MHz; 13/4 — 3 x JA; 14/4 — JA4MBM; 28/4 = 36 x JA plus JA6AXA on 144.200MHz; 29/4 = VK5ZDR, VK8XLZ; 30/4 = 5 x JA, 13/5 = 13 x JA; 29/4 = JA4MBM; 15/5 = 29 x JA, 29/5 = VK6WZM and 21/9 = JG2COF Signal reports on 144MHz varied from 5x1 to 5x5, power used was either 200 or 200 watts. Many of the six metre contacts were made with 20 watts.

Graham, who arrived just too late last month, indicated he had heard a new beacon signing JA6YBR, on 50.020MHz. The call sign indicates it as being a club station on Kyushu Island, but it is not known whether it is an attended keyer, or a beacon, although the frequency tends to support that it is a beacon. (I shall await further information — 5LP).

On 7/11, VK7SY-AU, the NZ VHF/SHINE project for the summer, between 0930 and 1015, working VKs 7FB; 4OF; 82XL; 6TM; 8BF; and 8TM, all Alice Springs. In Darwin, VK8ZW and VK8ZJR were also active.

Graham has been monitoring the 10 metre beacons and finds them useful indicators for an impending six metre opening. Thanks for the news Graham.

Two letters have come from Peter VK3DU, the first on 7/11, which indicated the first Es for Melbourne for the summer, the same date indicated by VK8GB. Stations were worked in Sydney, Newcastle, Walcha in Central NSW, and Bundaberg. Peter runs 10 watts to a three element Yagi, at 10m (35 feet). A further letter from Peter, on 12/12 shows that on 10/12 he worked P29BPL at 2236; 10/12 ZMBOY and ZL1AON; 12/12 0029 FK8EM; 0108 YJ8RG and 0134 FK1TK. This must have been quite a day for Melbourne as Peter said he worked five JA (including two in two and a half hours, with the ZL television stations giving an indication of things to come. The Pacific countries stations drifted in and out with changes in propagation, and it appeared only necessary to stay around for a while to work all three that were available.

FK8EM was S9+ for a short period. FK8EM also said ZMBOY has a lunch break from 2200 to 2230UTC and always calls and listens on 52.050MHz at this time. Peter also said that he had been advised that the P29BPL beacon was on 2200UTC and not heard so far so I am unable to confirm or deny... 5LP. Thanks for the letters Peter, by now you should have worked many more contacts by now also Eric.

Ken VK2BNN, sent in his sixth metre stations and added his station is a FT620B and a 50 watt linear in to a four element 12m high antenna. Ken included a photocopy of his QSL from WA4TNW KL7 which was for a contact on 13th March 1979, and on the back Clay has indicated this was his first Es contact. On six metres, Ken has further stated that this was the first ever VK2 to KL7, six metre contact. Clay reported that the band was open for two and a half hours and he had 32, 42 contacts.

A brief telephone message came from Eddy VK4KAA (ex VK4ZEW), who finished up in Mount Isa, after travelling via Melbourne and Ipswich Monitoring repair work. Eddy has not been able to conduct an inversion over the Coral Sea before leaving, he had a good two metre contact port Moresby, via the repeater, using his handheld. Also, he arranged a two way contact with WA on two metres, all helped by the VK5 designed pre-amplifier.

While still on the letters back-up, one has come from Toshio JR8XPV thanking me for confirming his contact with VK6AQ at Mawson. His home town of Hobart is only small he says, 13,000 people, placed among low mountains and not very good for VHF However, he has worked 55 DXCC countries via AO-10, but still needs South America. He operates all bands from 3.5 to 432MHz using phone and RTTY. He does have some problems with the beam antennas due to ice — most winter temperatures are around -10 degrees, with the lowest last year -40 degrees, so that is cold.

David VK2BA, sends his amended list of six metre countries and adds that Chris ZMBOY, made good use of a tremendous opening on 10/12 into work to VK2, 3, 4 and VK8GB. David said he worked the six metre station in SA many times. Karmacul until he had worked him! (Maybe VK8LP was lucky, but ZMBOY called me saying I was his first VK5 and he was looking for a contact. He worked me on 7/12, when he came through at around 2250, YJ8RG and the FKs have added to the interest of those early openings. David is pleased to report that in Sydney, at least, most operators seem to be observing the importance of leaving the 52.050MHz call frequency relatively clear of QSOs, although there

Amateur Bands Beacons

<table>
<thead>
<tr>
<th>FREO</th>
<th>CALL</th>
<th>LOCATION</th>
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<tbody>
<tr>
<td>VK6RPR</td>
<td>VK8GB</td>
<td>Darwin</td>
</tr>
<tr>
<td>VK7RR</td>
<td>VK8GB</td>
<td>Darwin</td>
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<tr>
<td>VK8GB</td>
<td>VK8GB</td>
<td>Darwin</td>
</tr>
<tr>
<td>VK9FE</td>
<td>VK8GB</td>
<td>Darwin</td>
</tr>
</tbody>
</table>

Photographs he took during his visit to the USA in 1983. I plan to use some of these during the next few months, but would like to start with a photograph of Bill Tyan W3XO, who is my contact and is sending the OZ1ST WORLD ABOVE 50MHz. Bill and I have been shuffling information backwards and forwards to one another for quite a few years, so from my point of view, it is pleasing to see the other man!
are those who still remain there. Hopefully the extra publicity which has been given through these columns to do what you can not to clog up that frequency is having an effect. From my own experience last year, most operators are very fair in their use of the call frequency and if the improvements continue as noted between last year and this year, there should not be a great deal of trouble in the future but also be applied to 144.100MHz, which may be continuing to suffer more than 52.050MHz.

Certainly I believe that since the FK stations have had a taste of two metres, there is a likelihood of more interest in that band out in the Pacific, so it is likely that eastern seaboard operators might be encouraged to look on two metres also. Calling took place at first on six as soon as Col was finished, so decided to give both of them WAS on two metres! The Es, and the widespread openings to New Zealand are an example of the outstanding and rewarding Sporadic E periods which has been happening during the flush of long distance six metre activity of 1978/80/81 etc, a period which could well continue for some time, enough to try. I must admit I did not feel conditions were quite right but one never knocks back a chance at distance. 1000Km is standing up at the right time on six metres and was thus able to make twoway contact. Signals at the time six metres were still able to use 50MHz. At 0720, Doug VK2XDH came into the fray and asked to try two metres. He called and there he was, I sent 5x4 and received 5x3 and we exchanged Ross Hull numbers, two.

SIX METRES — MOSTLY SIX METRES — MOSTLY

It is nice to give a blow by blow description of what has been going on since the summer Es period really got underway around the middle of November, literally there has been so much that has happened in the last 18 months we can barely begin to adequately cover the events. All Australian stations, all ZL districts and some of the Pacific island countries have been involved with contacts in all directions with the whole of the Pacific and beyond. In 1985 I always considered to have been one of the greatest Es years, perhaps assisted by the fact that Channel 0 was not around to cause problems and we were still able to use 50MHz. Given the present day reductions in activity due to TV stations, the past month must go down as one of the all time greats, and will be interesting to see if conditions will stay strong or weaken. When getting large amount of flack, I have always stuck to my opinion that Es seems to be more intense and widespread during the latter part of the sunspot cycles and in the light of 1985, there seems little need to modify that opinion!

The intense Es has brought with it a large increase in the right conditions for two metre contacts right across the nation with stations almost 2000km apart participating, and including countless contacts across the Tasman to New Zealand, and via the Falkland Islands. Brian VK2BU didn’t notice too much of this sort of thing happening during the flush of long distance six metre activity of 1978/80/81 etc, a period which could well continue for some time.

May I say for the benefit of our overseas readers, that Australia and New Zealand in 1985 has been experiencing one of the most outstanding and rewarding Sporadic E periods known, and if the long distance contacts on both six and two metres could be counted they would run into thousands! According to my own log book, I have operated on 13 days during the past month for 137 contacts with some days only one or two contacts as circumstances allowed, others with many hours of activity, and there has been no pushing for contacts contest style, but content to talk to old friends. It has just been that easy. Quite a few contacts this season using up to 50 watts, many others 10 watts, but signals have still been 5x9 for 1609km (1000 miles).

It has been good to see increased activity from VK1 and VK2 extending from Alice Springs, VK8ZC in Tennant Creek, VK8BGM, VK8ZWM, and VK8ZRJ from Darwin being amongst the more active stations, as monitored here.

Early in December, Ron YJ8RG from the New Hebrides started giving us contacts and could be heard working stations at all odd moments. Then along came December and we heard of many stations a new country before he was packing up and leaving soon after 10/12. While there was packing up and leaving soon after 10/12. While there was also we had P26JB from New Guinea, soon to be followed by Chris ZMBOY on Kermadec Island, north of New Zealand, who caused many a heart to flutter in anticipation of a contact. While these fellows were thrilling all and sundry, PK8EM, PK8B, PK8Q, PK8Z, and PK8Z made a similar appearance, eventually being somewhat astounded at the signal reports he was receiving particularly from the greater distance of VK5. Things were a bit quieter over the weekend of 16/12 to 18/12 but again some contacts with VK9LC worked again here, plus plenty of ZL activity, plus VK2,3,5,6, and 7.

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more than 40 watts and plenty of times 10 watts is adequate.

Whatever else needs to be said about the VHF bands can now be left until next month, when I should have some reports coming in from my correspondents in other states, together with what transpires at this end from 23/12 until next copy deadline which is 21st January 1986. This should transpire at this end from 23/12 until next copy, the matter and will air them perhaps next month, time for the next Contest. I have some thoughts on

such matters but nothing that I might not have mentioned before. I think and thus a view of feelings can be ascertained. As I said prior to the start of the Contest, that having the hindsight of this year's Contest, we should start looking at what is necessary to preserve the Contest as soon as 1986 starts, instead of leaving it until almost the time for the next Contest. I have some thoughts on the matter and will air them perhaps next month, but I want to hear from others prepared to be constructive with their thoughts, and having regard for the needs of all operators, both multi-band and those using one or two bands. If you don't think the present scoring table is right, then send me what you believe is right and setting out your position being reversed on 3/11. Contacts made with stations when 50MHz was not available due to equipment or propagation conditions can be printed for readers is April, and that is four months into the year.

EME REPORT

Doug VK3UM used the call sign VK7SA for his random contacts on 2/11 and 3/11. Conditions were poor to the US and fair to Europe, the position being reversed on 3/11. Contacts made on 2/11 were: 1415UTC K1FO sent 549, received 549/339; 1606 DJ6MB 449/449; 1615 to 1637 HB9SV 439/439. As an indicator of the poor conditions, HB9SV is one of the best stations, using 16 bays of DL6WK antennas, wooden booms and open wire feeds.

On 23/11, again using VK7SA: 0825 K2UYH 3x3/4x3; 1325 K2DDG 339/339; 1405 JA6CZD 449/449; 1450 G3LTF 339/339; 1557 F9FT 439/439; 1607 F1FHI 0/0; 1630 I5MSH 439/439.

3/11: 1500 WA1RUW 4x4/4x3 (also as VK3UM); 1540 K2JOK 4x4/3x3 (also as VK3UM); 1645 VE4MA 0439; 1800 W7GBI 449/49; 2035 SM3AKW 439/449; 1954 DL9KR 5x5/5x5; 2115 HB9SV 0/0.

As an indicator of the poor conditions, HB9SV is one of the best stations, using 16 bays of DL6WK antennas, wooden booms and open wire feeds.

On 23/11, again using VK7SA: 0825 K2UYH 3x3/4x3; 1325 K2DDG 339/339; 1405 JA6CZD 449/449; 1450 G3LTF 339/339; 1557 F9FT 439/439; 1607 F1FHI 0/0; 1630 I5MSH 439/439.

The minimum number of countries confirmed for an operator to commence being listed is five, including VK.

The position on the list is determined by the number of confirmed contacts. Where two or more operators have the same total, the first date listed with that total can only be displaced by someone having a greater number of confirmed contacts.

The next list is due to appear in August 1986, and entries will need to be on my desk no later than 15th July 1986. Claimants are reminded that full details of all contacts are required, viz date of contact; time in UTC; call sign of station worked; country; mode; report sent; report received; QSL sent and whether received. Split frequency contacts should be indicated. Please add YOUR call sign and signature, plus the date of your claim.

Most of the submissions sent to me so far have been very neat and precise and are a great help in determining eligibility. Computer print-outs of claims and updates are quite acceptable. I still reserve the right to require any claimant to send me any QSL cards needed to verify a particular contact.

There are still a lot of operators around the country with good tallies who are not listed. A few who come readily to mind include VKs 1VR 28HO, 2KAY 3AOS, 3AUU, 4AZ, 3JH, 4FO, 5RO, 5ZDR, 5DK, 6HC, 6KD, 7ZIF, 7KU, and 8GF. There are many others of course, but the inclusion of most of the above would make it a rather interesting list. Once the original list is made, updating is easy.

CLOSEUP

There is still quite a lot of material suitable for these columns on my desk, but this will have to be carried over until next month — I cannot extend the Editor's friendship too far by continuing to use up space.

Please remember the Ross Hull Contest entries must arrive at the Contest Manager's desk by Friday, 7th February 1986. If you entered, please send in a log and add any constructive comments.

This year, South Australia celebrates its 150th Anniversary and it will be a very busy time for many people, including your scribe. I hope I can stand the strain!

Closing with the thought for the month: "A man profits more by the sight of an idiot than by the orations of the learned". 73, The Voice in the Hills.
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MACEDOO PTY. LTD., 99 KENNY STREET, WOLLONGONG (042) 29 1455
E&M COMMUNICATIONS—14 COTTON STREET, DICKSON, A.C.T. (062) 29 6437
DIX ENGINEERING—3 JASMINE STREET, PORT MACQUARIE (065) 82 0175
FRANK BOUNDY—LISMORE (066) 86 2145

INTERSTATE
VIC.: EASTERN COMMUNICATIONS—166 ELGAR ROAD, BOX HILL (03) 286 3107
PARAMETERS PTY LTD.—1064 CENTRE ROAD, SOUTH OAKLEY (03) 575 0222
AM COMM ELECTRONICS—99 CANTERBURY ROAD, EAST CAMBERWELL (03) 836 7634
BRAN STARES—11 MALA MUSBY STREET. BALLARAT (03) 29 2828
SUMNER ELECTRONICS—78 KING STREET, BENDIGO (054) 43 1977
TAS.: HOBBY ELECTRONICS—477 NELSON ROAD, MT NEALSON (03) 22 6751
WATSONS WIRELESS—72 BRISBANE STREET, HOBART (002) 34 4303
ADVANCED ELECTRONICS—5 A THE QUADRANT, LAUNCESTON (03) 31 7075
MARINE & COMMUNICATIONS—19 CHARLES STREET, LAUNCESTON (03) 31 2711
V.K. ELECTRONICS—214 MOUNT STREET, BURNE (004) 31 7733
QLD.: MITCHELL RADIO CO.—59 ALBION ROAD, ALBION (07) 57 6830
SA.: BANDS—including:
FT: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY. LTD.—8 NILE STREET, PORT ADELAIDE (08) 47 3688
W.A.: ARENA COMMUNICATION SERVICES—642 ALBANY HWY., EAST VICTORIA PARK (09) 361 5422
TRI SALES—99 KENNY STREET, BURNE (09) 329 4160
WILLIS ELECTRONICS—155 ALBANY HIGHWAY, VICTORIA PARK (09) 470 1118
BAY RADIO—22 GRACE STREET, FERNDALE (09) 451 9381
FORD ELECTRONICS—230 HANCOCK STREET, DOUBLE VIEW (09) 446 4745

Further, beware of dealers not listed in this advertisement who are selling trio-kenwood communications equipment. All Kenwood products offered by them are not supplied by trio-kenwood (Aust.) Pty Ltd and have no guarantee applicable.
This is the first time I have written this, or indeed any other column. I bring to it little of expertise and long experience in the DXCC, and my exposure to DXCC activity has fallen into well-separated periods — the DXCC updating, and the ladder, will be the first priority. The following awards have been issued since the last list was published.

**AWARDS**

**WORKED ALL VK CALL AREAS**

- 1332 JA1BIN Takeshi Yamamoto
- 1333 JA1HNO Masaki Shimoki
- 1334 JA5JABY Hideki Takeuchi
- 1335 JA3HABO Hidekatsu Hizume
- 1336 J1YTVH Toshi Takahashi
- 1337 JA1ATS Yoshi Motozono
- 1339 OK1VX Bohuslav Petr
- 1340 OK9PEX Antonin Pokorny
- 1341 OK1PZP Ryszard Mizerak
- 1401 G3CZC E L Devereux
- 1402 G8KZI Keith Russell
- 1403 ZL1TJ T Gillies Baillie
- 1404 SZ4EG Tony Higby
- 1405 JABCN Hiroshi Sato
- 1406 HQ2SY Wonsuk Oh
- 1409 HQ2SG Satoshi Itagaki
- 1498 VK5CKW Ken Watson
- 1499 OK2BOR Slamovick Novak
- 1501 G3IVY Brian O'Sullivan
- 1411 VK4IAK Joe Ackerman
- 1412 DL1JS Kuno Huber
- 1413 Q3IAS Harold Dohle
- 1414 G3DZOS Harold Fudge
- 1415 RJ6BMT Akihiro Aoki
- 1416 OA2GM Hiroshi Yamamoto
- 1417 JS1LTE Hiroi Kurochuki
- 1418 KI2IOY Akira Numazaki
- 1419 JH1BBS Masao Yamamura
- 1420 JALMZ Fumihito Konno

**ARRL INTERNATIONAL HUMANITARIAN AWARD**

The ARRL Board of Directors have established this award to recognise those licensed radio amateurs or groups of amateurs from any country worldwide who by use of their skills in amateur radio have provided extraordinary service for the benefit of others in times of crisis or disaster. The Award will consist of a plaque or medalion to be presented to the recipient and an article describing the recipient's extraordinary achievements will appear in QST magazine, IARU societies' publications and general-interest consumer magazines.

**THE LAND OF THE BEARDIES AWARD**

This explains the title — THE LAND OF THE BEARDIES AWARD, which was launched at the Annual LotlB Bush Festival, in November 1985. Qualifications for the award are: 10 points which are accumulated by working club members and the club station. Point values are:

- The Club Station, VK2DOQ is worth two points.
- Bearded members are worth two points. These are — VK2s BBG; BYV; EBU; ESL; and VRB.
- Other club members are worth one point. These are — VK2s CBB; TB; BIC; PLN; BSF; PVD; WP; EU; PXT; KDA; EEX; ERS; CEC; EUW; ATS; and KFV.
- Of contact, per member per band, can be counted. Repeater contacts do not count. The cost of the award is $2 surface mail — air mail is extra.
- Bearded claimants may have their awards suitably endorsed by sending a photograph. Claim is by certified log extract, verified by one other licensed amateur and should be sent to the Award Manager, PO Box 26, Glen Innes, NSW 2370.

**THE LAND OF THE BEARDIES AWARD**

This column will, I hope, contain reviews of awards which are both easy and difficult, those with no charge and those which are expensive. If there is any preference, it will be for awards issued in this country. To maintain this variety, club secretaries are asked to send details of awards and anyone at all invited to request publicity for his favourite award or specialty.

How many, I wonder have obtained the UN-DU Award, which Bill Verrell and others in the 1930s? They both wore long flowing beards, and anyone looking for good land was told to look for the 'two bearded'. Hence the area soon became known as 'The Land of the Beardies'.

This column will, I hope, contain reviews of awards which are both easy and difficult, those with no charge and those which are expensive. If there is any preference, it will be for awards issued in this country. To maintain this variety, club secretaries are asked to send details of awards and anyone at all invited to request publicity for his favourite award or specialty.

**THE LAND OF THE BEARDIES AWARD**

Finally, here is a new one, which is from the Glen Innes and District Amateur Radio Club. A letter from the club relates that the major credit for opening up the area of the Northern Tablelands, that includes Glen Innes, goes to two stockmen, Chandler and Duval, who worked cattle in the area in the 1830s. They both wore long flowing beards, and anyone looking for good land was told to look for the 'two bearded'. Hence the area soon became known as "The Land of the Beardies".
Wednesday, 21.186 at 1000; 28.470 at 2230.
Thursday, 7.086 at 0300; 14.186 at 0300.
Friday, 14.286 at 1100.

The Primary Net on 3.586MHz will remain throughout 1986. However, other bands and time will change according to conditions. These changes will be publicised one month prior to coming into operation.

**CW NETS**

Primary net —
Monday, Thursday on 3.536 at 1000.
Other nets —
Tuesday, 7.036 at 0100; 21.136 at 0900.
Wednesday, 14.036 at 0300; 3.836 at 1000.
Thursday, 7.036 at 0300; 21.136 at 0500.
Friday, 14.036 at 0900; 28.186 at 0300.

DX operators are requested to operate on, or near the above frequencies at other times as these frequencies will be widely published via Nets and Clubs, etc.

VK5 stations will check in during the 10 minutes prior to the nominated starting time to allow easy listening of other stations wishing to contact VK5s.

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**PRINTED CIRCUIT BOARDS**

Eycke Zimmermann ZL1AGQ, is the local (ZL) facility for the manufacture of printed circuit boards for the VHF COMMS Magazine. Eycke holds the negatives, and he can be contacted at:

PO Box 31-261,
Auckland 9
New Zealand

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**AMATEUR RADIO MAGAZINE AWARDS**

At the December Publications Meeting, the Annual Amateur Radio Awards for 1985 were selected. The Award recipients are:

Marlene Austin VK500, was awarded the Alan Shawsmith Journalistic Award for her article on the history of the VK5 Division.

Ron Cook VK3AFW received the Higginbotham Award for his services and articles to Amateur Radio.

Lloyd Butler VK5BR, was awarded the Technical Award for his various articles contributed to Amateur Radio during 1985. The Committee considered that the Initial Aircraft Enhancement article, written by Doug McArthur VK3UM, was worthy of an Honourable Mention.

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**RADIO EXPERIMENTER’S HANDBOOK**

This first volume is 132 pages chock-full of circuits, projects to build, antennas to erect, hints and tips. It covers the field from DX listening to building radio-teletype gear, from ‘twilight zone’ DX to VHF power amplifiers, from building a radio FAX picture decoder to designing loaded and trap dipoles. This book carries a wealth of practical, down-to-earth information useful to anyone interested in the art and science of radio. Your copy is available by mail order for $7.95 plus $1 to cover postage and handling (add $5 to these charges for air mail postage outside Australia)

from:
Federal Marketing
P.O. Box 227
Waterloo, N.S.W. 2017

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**HF TRANSCEIVERS**

FT980—all mode; 12 memories; general coverage receiver  
FT757GX—all mode; 8 memories; all normal options installed; general coverage receiver  

**VHF & UHF TRANSCEIVERS**

FT726R—all mode; 10 memories; 10 watts output; two VFOs; can hold three modules (2m, 6m, 70cm, 21/28m modules) plus satellite IF unit; AC/DC operation  
FT203R-handheld 2 metres; 2.5 watts, thumbwheel; optional headset/microphone & VOX operation  
FT209-RH-handheld 2 metres; 3 watts; keypad entry; optional headset/microphone & VOX  
FT290R—all mode portable 2 metres; 2.5 watts  
FT270R-mobile 2 metre FM; 25 watts; 10 memories; optional voice synthesiser  
FT2700R-mobile 2 metre & 70cm; 25 watts both bands; 10 memories; full duplex 2m/70cm  

**LINEAR AMPLIFIERS**

FL2100Z-160 — 10 metres; 1200 watts maximum input  
FL2010-2 metres; 10 watts out; suits FT208, FT290, etc.  
FL7010-70cm; 10 watts out; suits FT708, FT790, etc.  

**ANTENNA TUNING UNITS**

FC700-suits FT707/77; inbuilt 150 watts dummy load  
FC757AT-automatic; suits FT757/FT980; inbuilt 150 watts dummy load  
FAS-1-4R antenna selector (four-way)  

**EXTERNAL VFO**

FV700DM-suits FT77/707; 12 memories  
FV102DM-for FT102  

**TRANSVERTER**

FTV707-suits FT707/77, takes one module  
-6m, 2m, 70cm modules for FTV901, FTV107 & FTV700  

**POWER SUPPLIES**

FP700-suits FT77, FT757; 20 amp inbuilt speaker  
FP575GX-switch mode; 20 amps  
FP757HD-heavy duty; inbuilt speaker fan  
FP7-3 amps  
FNB-2, FNB3, FNB4-NiCad packs for handhelds  

**CHARGERS AND DC/DC ADAPTERS**

NC-15; NC-8; NC-3A; PA-2; PA-3; etc.  

**EXTERNAL SPEAKERS**

SP102-suits FT102, FT726, FT757GX; has filters  
SP980-suits FT980; has filters  
SP55-general purpose  

**TRANSCEIVER ACCESSORIES**

AM/FM units; keyer units; WARC bands mod kit for FT101Z, FT107, FT901; FIF-232C (RS232 interface); extender boards; mobile brackets; etc.  

**MICROPHONES**

MD-1B8-deluxe desk type with scanning  
MH-1B8-hand mic with scanning  
MH-12A2B-speaker/mic for FT203, 209, 703, 709  
MF-A3B-boom mic for mobile or base use  
YM-34-desk mic; dual impedance  
YE-7A-hand mic; 4 pin; 600 ohm  

We also have a range of YAESU COMMERCIAL HANDHELDs and MOBILES approved by DOC. Low and High band VHF, VHF Marine handhelds, UHF handhelds and mobiles.  

**TELEPHONE, TELEX OR WRITE TO BAIL ELECTRONICS FOR HELPFUL ADVICE. MAIL ORDERS ARE WELCOME.**
YD-846 — hand microphone; 50 kohm.
YM-36 — hand microphone; noise cancelling.
YM-40 — for FT-480, 680, 780.
YM-49 — speaker/mic for FT-290, 690, 790.
YM-24A — speaker/mic for hand-helds; four pin, six pin, seven
and eight pin- plus and sockets for above.
YH-1 — head-set/boom microphone for hand-helds and mobiles.
YH-2 — head-set/boom microphone for FT-203, 209, 703, 709, SB-
1, SB-2, SB-3, SB-10 switches.

HEADPHONES
YH-55 — with ear-muffs.
YH-77 — lightweight.

RECEIVERS
FRG-8800 — HF communications receiver, all mode.
FRV-8800 — VHF converter (118-174MHz) for FRG-8800.
FRG-9600 — VHF/UHF receiver; all mode; 60-905MHz; 100
memories.
FRT7700 — antenna tuner for FRG7700/8800.
FRA7700 — active antenna for FRG7700/8800.
FRV7700 — VHF converters for FRG7700.
Memory unit option for FRG-7700.

HAM CLOCK
Yaesu QTR-24D — quartz, shows time zones.

FILTERS
CW, CW (narrow), AM, SSB (narrow), for transceivers.
FF50IDX (30MHz LP).

SERVICE MANUALS
For transceivers and receivers.

VACUUM TUBES
6JS6C (NEC); 6146B; 6K6D; 6JM6; 6GK6; 12BY7A.

SEMI-CONDUCTORS & SPARE
PARTS
We have a large range of Yaesu spares; if they are not in stock, we
will get them from Yaesu.

EMOTATORS ROTATORS
5025AX; 1102MXX; 1102MSAX; 1103MXX; 1103MSAX.
Rotator accessories — 301 bearings; bottom clamps; couplings; six
and seven core control cable.

MORSE KEYS
Hand keys; “Bug” keys; manipulators; Katsumi electronic keyers.

METERS
SWR-200 Oscarblock power/SWR dual meter — up to 150MHz.
T-435M fwd/ref power dual meter — 146 and 435MHz ‘N’
connectors.
FSL-5 — SWR dual meters; ideal for low power transceivers.
YS-60 — SWR & Power; 1.6-60MHz.

ANTENNAS
Hidaka VS-33 tri-band beam; VS-73SR UHF 78dB mobile; VS-73GH
70cm ground plane; VS-27GR 144/435MHz mobile.
Yaesu RSL series for HF mobiles; RSL/45 2m five-eighth wave
mobile; RSL/45 2m ground plane; RSL/45 70cm colinear; spare
antennas for FT-290/690; YHA- 44D half-wave antenna for 70cm
hand-helds.
DP-CP5 — trapped vertical 80-10m; trap radials included.

COAXIAL CABLE
5D-FB; 8D-FB; RG58U.

BAIL ELECTRONIC SERVICES
38 FAITHFUL STREET, WANGARATTA 3677
Telephone: (057) 21 6260 — Telex: 56880
Mail Orders, Mastercard, Visa and Bankcard Welcome.
How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3138

Ladies and gentlemen — is it not time we thought a little in the future? Where are any, are our new exponents of the hobby being sought? I admit I must introduce to you, or to close, the Bottom of the Solar Cycle and the bands are pretty quiet but will they be as quiet when conditions improve. Many have lost interest, sold their equipment and gained an interest in another hobby. Some of our DXers are benefiting from this however there are plenty of countries still to be heard.

Will they return? If they don't who will fill the void? DX operators are a 'breed' alone and we must introduce to you, or to close, to this remarkable hobby that we have the privilege of using.

How many DXers have assisted in introducing it into the schools, JOTA and Youth Organisations? I feel it cannot be as quiet when conditions improve. Many have lost interest, sold their equipment and gained an interest in another hobby. Some of our DXers are benefiting from this however there are plenty of countries still to be heard.

A modification of the wording of Countries List Criteria 5(b). It now reads as follows:

5(b). The following will not be eligible for correspondence band endorsements for DXCC credit for the host country: Embassies, consulates and extra territorial legal entities of all nature, including but not limited to, monuments, attaches and offices of United Nations agencies and related organisations, other inter-governmental organisations or diplomatic missions.

LEFT FOR PASTURES GREEN?

Mike AT7AO, who has also operated as ATXO, for the past six years with about 50 000 QSOs under his belt, has left the State of Qatar. Unfortunately Mike had to leave the logs with the authorities; and there is no chance of receiving a card if you missed out, though Mike was very thorough with his QSLing and I am sure most people would have one via the Bureau.

AZORES — A NEW PREFIX

Effective this year, the CT2 prefix, according to LES NOUVELLES DX, will be replaced by a CU plus number which will denote the licensee's island of residence.

The numbering system will be as follows: CU1 Santa Maria, CU2 Sao Miguel, CU3 Terceira, CU4 Graciosa, CU5 Sao Jorge, CU6 Pico, CU7 Faial, CU8 Flores and CU9 Corvo. Another prefix hunters delight!

A NEW DXCC COUNTRY??

Eventually and probably yes. I can really hear the 'mutterings' of DXers far and wide of 'not another one' as I write this. And, in the Netherlands Antilles will be granted separate status this year. As from the 1st January, they issued their own QTHs.

Some of our misfortunes and it can be imagined what one could count on their fingers back into his QTH window. Let us not complain folks, at least we have a hobby and of course freed on presentation of his QSLing and I am sure most people would have one via the Bureau.

LIFE NOT SO EASY

Larry N7OF, initially during the first weeks of his stay it was not easy. He worked mainly Europeans and a few JAs, and he worked mainly Europeans and a few JAs, lots of really rare African prefixes and less than what one could count on their fingers back into his home country. Most of the operation was on CW.

Larry's problems were compounded by a day working day of between 12 to 14 hours per day. The Ministry of Information together with the Ministry for Security, who issued his amateur permit also allowed Larry the 178th permit to take photographs. Even then he was arrested twice and of course freed on presentation of his permit. For Larry he had a machine gun bunker about 15 metres away from his QTH window. Let us not complain folks, at some of our misfortunes and it can be imagined what one could count on their fingers back into his home country. Most of the operation was on CW.

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New Format

World Radio has changed its format to approximately the same size as Amateur Radio. In a friendly Christmas note to the Managing Editor, Mr. Charles F. K. Young, the Managing Editor has had printed and sent to Baghdad, some very colourful cards depicting the operating position, antennas and the city Mosque.

The new format that has individual Post Office boxes are responsible for their own cards and it is unknown if they can oblige due to economics. Yasu JR1AIB, gained all this information when he visited Majid, the Chief Station Officer. Yasu was allowed to make 20 odd QSOs on 20 metre CW amongst whom were two JAs who received a new DX Country, to add to their totals.

Majid advises that it is best to send cards air mail, due to the hostilities by sending 'sea mail' through the Straits of Hormuz, where they could end up in the desert. He also advises that they are valueless in that country if the issuing date is in excess of two years and three IRCs are required.

He reports that the station is well equipped with Drake 'C' Line and an Atlas transceiver, a Tribander and inverted 'Vees' for the lower bands.

The correct mailing address for Y11BQG is PO Box 5864, Baghdad where you may have a chance of picking up that much sought after card. Good luck!

Page 34-AMATEUR RADIO, February 1986
and it may be a case of joining the growing group

complaint now is that ne forgets about meals and

bands, much to Feng's wife's dismay as her

be adopted for societies to base their own

the embarrassment this 'person' is causing them.

The legitimate users

of the frequencies In Tiawan are very upset about

is using the calls of BVOBA, CR, JC, JR, RL, CRA

the meals.

returned laden with more equipment such as a

is anticipated that he will become quite active

TAIWAN

Tim BV2A/B, is still the number one amateur in

Feng BV2DA, has worked 4000 odd stations since

obtaining his licence and his son has just

returned laden with more equipment such as a

triband beam, rotator and CW filter from JA.

Hence a big improvement in not only time on the

bands, much to Feng's wife's dismay as her

complaint now is that he forgets about meals and

going to church on Sunday. My advice to her is

that things will get worse before they get better and it

may be a case of joining the growing group of

amateurs in that country and allow Feng to cook the

meals.

BEWARE — ANOTHER PIRATE

Two reports of a pirate named Jason. This person

is using the calls of BV2GA, CR, JC, JR, RL, CRA

and BV9CA. It appears he is working lots of JA,

VK, W and ZL amateurs.

At the time of writing the only authorised call

signs issued are BV2A, B, DA, FA (one of the

amateurs who supplied the information), GA, 5HA,

6IA, 7JA, LA, ZA and the special station BV2CRB,

which is not presently in use. The legitimate users

of the frequencies in Tiawan are very upset about

the embarrassment this 'person' is causing them.

Masa JH5EES, visits the island about once a

month and of course operates his equipment as

required.

MINAMI TORISHIMA

This small triangular Island, with each side

measuring about two kilometres, has a 1500

metre runway and a 400 metre LORAN tower, and

has a population of only a handful of Inhabitants who

are employed by the Department of Meteorology

and the Defence Department. Special permits, not

easily obtainable are required to visit the area.

Masa JH5EES, visits the island about once a

month and of course operates his equipment as

required. This time permits, which is capable for all bands on

both CW and SSB. If you want this island, drop

Masa a line with an SAE plus two IRCs and set up

a sched. He is very obliging and I am sure it will

bring results.

THE 'GLOBETROTTING COLVINS':

Heather VK2HD, has kindly passed a letter on

from Lloyd and Iris Colvin via the YASME

Foundation. Iris and Lloyd note that they made

approximately 10000 QSOs from Namibia in South

West Africa to amateurs in 148 countries.

They note that they were one of the first to use

the ZS3/home call and Iris's call was in use this

time. There was much confusion by the amateurs

calling ZS3W6OL, with calls being heard such as

W6OL, ZS3, ZS3W6E, ZS3, W6OL, ZS3OL and on it

went.

If you worked such strange calls, you were not

the only one and please check your log and

submit the correct call when applying for your

card to PO Box 2025, Castro Valley, California

94546 USA.

They both hoped to be operating from the

Kingdom of Lesotho prior to Christmas last year.

THE COLVIN CERTIFICATE

In the November issue, I expressed an opinion

about a 'Colvin Certificate'. In fact one does exist.

Reg VK3YD, has provided proof of that by

submitting Certificate No 344.

Perhaps the YASME Foundation would like to

supply details and they will be promulgated in this

column to the folk that have worked the family

over the years and been unaware of its existence.

Personal feelings are that it should be left until

next time.

BEWARE!!

Someone is pirating the call 9M2PV and

inquiring about a 'Colvin Certificate'. In fact one does exist.

Reg VK3YD has provided proof of that by

submitting Certificate No 344.

Personal feelings are that it should be left until

next time.

ARGENTINA AREA IDENTIFICATION

The authorities in Argentina use the letter of

the alphabet to denote the area the station is

operating from, not the numeral. For example A,

B and C denote Buenos Aires, D and E the

Province of Buenos Aires and Z is reserved for the

Antarctic and Antarctic Regions. My comment, a

strange system!

LIZ W3CDQ — AGAIN!!

A reader has kindly sent me a photocopy of a

couple of pages of the 12th Edition of the Wireless

Radio System

It appears that the JA defence forces will be

setting up a system during this year. It is proposed to

mount the 200kW transmitter on Iwo Island,

which will take up an area of 375 metres by 375

metres. The receiving site is anticipated to be on

Chichijima Island, which is the main island of the

Ogasawara group and 50km from the transmitter

and will take up an area 2750 x 120 metres. The

frequency range spread over 24 channels is in the

range of 5 to 28MHz. Let us trust that none of

those channels fall in the amateur spectrum

allocations.

Personal feelings are that it should be left until

next time.
WORKED FROM THE WEST COAST

1. 160 METRES 180 METRES 20 METRES
   2030UTC 20UTC 2100UTC
   A25/G3HCT ** Luis P Camano 4D9RG **
   VK9XJ returns from holidays in Perth. ** Cards
   ** Cards from K3BIP are being despatched. ** Luis
   ** Luis S92LB, is still quite active
   ** for several years, surpasses similar US and USSR
   ** A static 9.6 metre yacht on a three year cruise
   ** What is Willis island presently
   ** DXNET LIST
   ** DXNET LIST
   ** 75TH For Radio Amateurs has honoured Jim VK3YJ,
   ** DON'T forget Chris ZLBOY is quite active
   ** a card, it would be prudent to
   ** $ killed by F3ZLAM, the majority going from the
   ** 11 IRCs. If interested, inquiries
   ** a special occasion, the scientist aboard the stranded
   ** Sincere apologies to the holders of these call
   ** really became the
   ** Service since 1962. Quite a period Luis. My
   ** operation, plus other duties and throwing the complete
   ** and was operating from Lord Howe as VK9NM/LH was
   ** A25/G3HCT offers it, together with an up-to-date ARRL
   ** HI8LC, OE2DYL, ON7WW, VK5ZPT, 6HD, NE, G3NBC and Miss
   ** by the RAAF under emergency medical
   ** FITS Z2F is only recognised by non-residents for
   ** and statistical data outstanding enough to
   ** that Willis island presently being
   ** an exceptional QSO which
   ** First year, surpasses similar US and USSR
   ** such a publication would still exist and
   ** CO Magazine is awarding a special certificate for
   ** NEP and SHXE, 9J2BO, 9M8EN, 9M8GH. ** DJ90N/S9*,
   ** All of this is possible to the fine people
   ** MG70F, MG93X, MG95X, MG96X, MG98X, MG99X,
   ** if you worked
   ** being a question of DXXC or awards as it appears
   ** South Georgia, shouldn't be overlooked in case
   ** address to him via PO Box
   ** VU2KJ, is the first YL in India to have passed the
   ** man on the VHF DXCC
   ** Astatic, to individuals that had
   ** work, the world that it
   ** and PX1NS, a Japanese prison guard, AHOY, a
   ** estimated cost of A$250,000, has been
   ** is Luis P Caamano, PO Box 88, Santo Domingo.
   ** the Tokelau Islands next month by all reports. **
   ** hopefully at the QTH of CTA1AES
   ** destroyed many incoming QSL cards. If you are
   ** would be prudent to reapply. ** Luis, was nominated
   ** it, together with an up-to-date ARRL DXCC list for
   ** DXCC, and the other 13 members of the scientific
   ** to the Extra Class.
   ** and scientists aboard was
   ** to the Extra Class.
   ** 25 recipients. * * For Radio Amateurs is employed
   ** plus 2 268 Club Stations in
   ** allowing it, together with an up-to-date ARRL
   ** to have started working on the magazine,
   ** achieved for DXCC or awards as it appears. ZK3PM,
   ** generous award. Our Dutch dentist.
   ** AHOY, a Belgian shallot grower and PA1NS, JAILER,
   ** a fantastic job, even if over-worked.
   ** a card, it would be prudent to
   ** with the prize awarded.
   ** special occasion, the scientist aboard the stranded vessel
   ** this month prior to this period 2 050 upgraded with
   ** it, plus other duties and throwing the complete
   ** holding cards until something starts to materialise
   ** VK3AH. ** VK99J returns from holidays in Perth.
   ** normally being acknowledged by
   ** VK9NM/LH was
   ** DXCC, it may not be
   ** the majority going from the Novice grade to the
   ** that the vessel having
   ** holding it, together with an up-to-date ARRL
   ** radio amateur, it may not be
   ** the Tokelau Islands next month by all reports. **
   ** in excess of 116 000 operators. It is interesting to
   ** its OM EA9IB and Pilar EBAAM was the first
   ** 2030UTC on 14.180 MHz at 2200 UTC. ** A25/G3HCT
   ** the Tokelau Islands next month by all reports. **
   ** to have started working on the magazine,
   ** destroyed many incoming QSL cards. If you are
   ** would be prudent to reapply. ** Loly EA9IP
   ** 14 UTC on 2200 UTC. ** A25/G3HCT
   ** Howie VK9NM/LH was
   ** A25/G3HCT. Congratulations Luis and what is your
   ** A25/G3HCT offers it, together with an up-to-date ARRL
   ** doing on it being acceptable for
   ** 11 IRCs. If interested, inquiries
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
   ** the Tokelau Islands next month by all reports. **
STARTING A RADIO ELECTRONICS WORKSHOP

Drew Diamond VK3XU
Lot 2, Gatters Road, Wonga Park, Vic. 3115

PURPOSE
There are many benefits to be had from maintaining facilities for home construction and repair of electronic equipment. The most obvious are:

- Pleasure and satisfaction derived from 'rolling your own'.
- Experience is gained in design and troubleshooting.
- Serves money.

Newcomers to the hobby should give serious consideration to setting up at least the basics of a workshop. The purpose of this article is to introduce some well-known, and perhaps some less familiar items which should prove helpful.

ACCOMMODATION
The amateur will probably not have much choice as to where he or she may install a workshop. If a choice does not exist however, places which are subject to extremes of temperature, humidity, dust, or noise should be avoided. There are also some more subtle considerations. For instance, an uninsulated metal roof will, under certain weather conditions, allow condensed water to fall from the underside. Also, unsealed concrete surfaces will emit dust and sweat moisture. A timber floor is to be preferred over concrete, as it is possible to stand for longer periods without fatigue. If carpet can be arranged, so much the better (don't fall into the habit of flicking solder onto the floor, however!).

The workbench should be about waist height, with a three or four legged stool to suit. The bench should be located near a window, preferably under it, so allowing work to be done with natural light during daytime, and will prevent a feeling of being cut-off from external activities. A raised shelf with a depth of about one third that of the bench will be found handy to accommodate the most oft used test equipment (see photo). The full area of the bench can then be used productively. An incandescent lamp on a flexible arm should be provided. Fluorescent tubes generate considerable radio-noise, so this must be kept in mind when working on sensitive equipment, such as receivers.

STORAGE
Amateurs are great hoarders. We collect 'stuff' from all sorts of sources, knowing that it will be useful — one day. There are lots of storage devices available now. Some of these, and cheaper methods are outlined below:

1. Photo 1 — Suggested Bench Layout. The bag has been removed and the tap end cut out with a sharp knife.
2. Photo 2 — Willow Storage Bin (plastic drawers).
3. Photo 3 — Ikea Storage Bin (cardboard drawers).
5. Photo 5 — Baby Food Jars.

The multimeter is a must. A meter with voltage DC and AC, current DC and AC, and resistance (ohms down to x1) will do the job. The choice of analogue or digital must be left to the individual, as both types have their pros and cons.

INSTRUMENTS
AMATEUR RADIO, February 1986-Page 37
A R Showcase

NEW 2m FM MOBILE TRANSCEIVERS

The Kenwood TM-2530A/TM-2550A/TM-2570A two metre FM mobile transceivers have been designed to satisfy the needs of the most demanding two metre operator. A wide range of innovative features have been incorporated in the basic design, including a large, easy-to-read LCD display, 23 multi-function memory channels for storing frequency, offset, telephone number and any one of 6x20, 0-40, 0-80, and 0-160 metres. A zoom facility enables the top half or the bottom half of each screen to be displayed over the entire screen. This action immediately doubles the resolution of the display. There is also a Freeze Frame facility.

An electronic alarm facility is incorporated which provides both a shallow and a deep alarm. These settings are displayed on the CRT. The alarms can be set to sound when the depth of water becomes deeper than the shallow setting and likewise with the shallow setting.

The control panel is back-lighted for night use and easy to operate. It also includes controls to select the sweep speed, to impose a screen over the CRT display as well as gain, Shallow alarm, deep alarm, screen brightness and power ON/OFF. The CRT also displays the battery voltage.

The DM-60 Video Sounder operates from a normal 12 volt battery and draws only 1.8 amps. Dimensions are 135 (H) x 205 (W) x 230 (D) mm and weighs 205kg. It comes complete with DC cable, mounting bracket, sun shade hood, operators manual, and appropriate 200kHz transducer.

Further details can be obtained from the importers, Imark Pty Ltd, 167 Roden Street, West Melbourne, Vic. 3003.

RADIO AMATEUR ALSO BUILDS MODELS

Roy Stephens ambitions to be a Marine Engineer were interrupted when at 15 he contracted Polio. A recovery period taking many years produced an opportunity to study electronics at RMIT which led to a career in radio and communication maintenance, as well as a Broadcast Operators Licence and the call sign VK4BRS.

Roy, who now resides in Flaxton, Queensland, spends a busy retirement building live steam scale model locomotives which are capable of hauling 12 adult.

The photograph shows Roy using a Superscope soldering iron (which he describes as his constant companion since the early 1950s), working on an O-24c (wheel configuration) tank loco. It is a freelance model of the tank locos used to haul on suburban lines before electrification.

UNDERWATER VIDEO SOUNDER

The Imark DM-60 Video Sounder is for use by the serious sport-fishermen and pleasure boaters.

It is a 146 metre (480') compact, lightweight depth sounder which utilises a 15cm (6") CRT screen instead of the usual chart paper to display the sea bottom, reefs, and fish beneath the vessel. Thus, it is not necessary to buy chart paper.

The DM-60 has six basic depth ranges of 0-10, 0-20, 0-40, 0-80, and 0-160 metres. A zoom facility allows the top half or the bottom half of each screen to be displayed over the entire screen. This action immediately doubles the resolution of the display. There is also a Freeze Frame facility.

An electronic alarm facility is incorporated which provides both a shallow and a deep alarm. These settings are displayed on the CRT. The alarms can be set to sound when the depth of water becomes deeper than the shallow setting and likewise with the shallow setting.

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Further details can be obtained from the importers, Imark Pty Ltd, 167 Roden Street, West Melbourne, Vic. 3003.

NEW STORAGE OF 516 MBYTES

The Priam's 808 Advanced Series 8" voice coil technology drives are designed to provide improved data storage and management in multimedia and social area network systems. Although packaged in an enclosure no bigger than a standard eight inch floppy drive case, the 808 Series rivals the performance characteristics of the stand alone "washing machine" storage units.

A 20 millisecond average access time and a transfer rate of 1.81 MBytes per second yield performance complementing mini and mainframe applications. Two additional bonuses of the 808 Series are the low power dissipation of 85 watts and the minimal weight of 10 kg. No special allowances for either cooling or floor load need be made.

Page 38-AMATEUR RADIO, February 1986
The 808 series drives offer ESMD and Priam interfaces while lower capacity drives (227 MByte and 344 MByte) from the same series have as their options SMD, PRIAM, SCSI and ANSI interfaces.

For further information contact Priam’s Australian Agent: Daneva Australia Pty Ltd, 64-66 Bay Road, Sandringham, Vic. 3191, phone (03) 598 5622 or 47 Falcon Street, Crows Nest, NSW 2065, phone (02) 957 2454.

PORTABLE ANTENNAS FOR 27 AND 500MHz

Scalar Industries have designed a series of continuously loaded mobile antennas for portable and ‘Walkie Talkie’ applications which are ruggedly constructed to withstand rough handling. These ‘stubbies’ may be bent to almost any angle without cracking the protective black PVC finish and therefore cannot accidentally be shorted out.

They are for the frequency range from 27 to 500MHz. An excellent range of connectors are available including BNC; Motorola; Push-on (fits 10mm); ¼” x 26TPI Ferrule; TNC; UHF (PL259); N types and many more.

Of particular interest are models M99RC suitable for roof mounting in mobile vehicle installations. These are supplied tuned to a specifically matched base for improved VSWR. M99RCHD with Ferrule and matched base is especially developed for ambulance use. The M99RT is for hand-held transceivers and equipment with ½” x 26TPI stud. Also the M99RC is normally a flexible antenna, but it can be supplied with a factory fitted internal stiffener which will convert it for heavy duty use. Always specify operating frequencies connector type and application when ordering.

For further information contact Scalar Industries Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137, phone (03) 725 9677 or branch offices in Sydney (02) 502 2888; Brisbane (07) 395 1188 or (07) 395 1817; Perth (09) 446 9177.

SAM DOES IT AGAIN

Sam VK2BVS, completed the 14km Fun Run from the Sydney Town Hall to Bondi Beach in 99 minutes 2 seconds. Using the call sign VI2BVS, to celebrate the 75th Anniversary of the WIA, with a two metre whip (flying the Australian flag), Sam joined 15 000 other enthusiasts in the 15th Annual City to Surf Run, held on 4th August 1985.

WICEN provides communications for this event so Sam was not short of moral encouragement and the occasional eyeball along the way.

CORRECTION CORNER

Loading up on 1.8MHz, Page 13, December 1985

Third paragraph under heading TESTS — itRp should read itRp

laRr should read laRr

Appendix 1 — Xi = RpRa - Ra should read Xi = RpRa - Ra

Equation 5 should read

Xi + Ra2

Xi

AUSTRALIAN CONTINENT SPANNED DIGITALLY

Installation of the world’s largest digital radio trunk system has been completed by Telecom Australia and it stretches 5 100 km from Perth to Brisbane.

The 140 megabit per second system, costing $73 million, would carry large volumes of voice, data, text, sound, and television traffic with high reliability.

It can accommodate up to six radio bearers, each of which could carry the equivalent of almost 2 000 simultaneous telephone conversations or a number of television relays.

Electronics Today is Australia’s dynamic electronics monthly. It has more special features, new and exciting projects to build and a wealth of information on components, equipment and new technology. Regular features include Australia’s top hi-fi reviews and news on communications and computing. Buy your copy now from your local newsagent, or become a subscriber and have the magazine home delivered. Only $27.00 for 12 issues.

Send your cheque to: Subscriptions Department Federal Publishing P.O. Box 227 Waterloo, N.S.W. 2017

AMATEUR RADIO, February 1986-Page 39
CONTEST CALENDAR

FEBRUARY
1- 2 RSGB 7MHz SSB Contest (Rules January issue)
8- 9 QCWA CW QSO Party (Rules this issue)
6- 9 YL/SSB Phone Contest (Rules this issue)
9- 10 YL/CW Contest (Rules this issue)
9- 10 Dutch PACC Contest
15-16 1986 ARRL DX CW Contest (Rules January issue)
21-23 CW Contest (Rules this issue)
22-24 RTTY Journal Contest (Rules this issue)
22-23 Peter II Contest (Rules this issue)
22-23 RSGB 7MHz CW Contest (Rules this issue)
22-23 YLOM CW Contest (Rules this issue)
22-23 UBA SSB Trophy Contest (Rules this issue)

MARCH
1- 2 ARRL DX Phone Contest (Rules January issue)
8- 9 QCWA Phone QSO Party (Rules this issue)
8- 9 Commonwealth Contest 1986 (Rules January issue)
15-16 Bermuda Contest
15-16 John Ruby Memorial Field Day Contest (Rules this issue)
22-24 BARTG Spring RTTY Contest

Preparation of material for this issue has presented me with an extremely heavy workload. My visit overseas was extended beyond what I expected and has resulted in some difficulty in even producing the results of the Remembrance Day Contest for this issue. This also means that the publication of the results of the 1985 VK Novice Contest will have to wait until March.

Comments on the RD Contest logs will also be held over. Congratulations are due to the VK1 Division on their win in the RD. It would appear that the formula now in use for some time, to determine the winning Division, might mean that some surprises are in store in the future.

I have not had time to make a detailed analysis of the final results, although I find it interesting to note the change in situations now that the Novice Contest, to be held in June. It could be quite an interesting one this year.

REMEMBRANCE DAY CONTEST — 1985 RESULTS

The formula for the determination of results for each Division is as follows:

Total Points/Total Divisional Licences multiplied by weighting factor.

<table>
<thead>
<tr>
<th>VK1</th>
<th>VK2</th>
<th>VK3</th>
<th>VK4</th>
<th>VK5</th>
<th>VK6</th>
<th>VK7</th>
<th>VK8</th>
</tr>
</thead>
<tbody>
<tr>
<td>5369/307</td>
<td>6302/726</td>
<td>12064/1394</td>
<td>12862/1394</td>
<td>5067/519</td>
<td>12064/12064</td>
<td>12064/12064</td>
<td>12064/12064</td>
</tr>
<tr>
<td>1.08</td>
<td>8.19</td>
<td>15.44</td>
<td>12.352</td>
<td>9.22</td>
<td>11.46</td>
<td>12.352</td>
<td>8.19</td>
</tr>
</tbody>
</table>

Note: VK5 points and license totals are added to VK6.

As indicated in the January issue, the Federal Executive advised me that discussion regarding the CW Contest resulted in a decision to remove this from the calendar. In an effort to resolve the problems surrounding this subject, a suggestion was made by Wally VK2DEW, who is a previous Federal Contest Manager and the Alternate Federal Contest Director for the VK2 Division. The suggestion was to use the Federal President's Cup as a trophy to be awarded on an annual basis to the top CW scorer in the Field Day Contest is certainly a good one, and I am indebted to Wally for his continued interest and help.

You might note that in this issue I have provided a fairly comprehensive listing in the Contest Calendar. My aim in doing so is not merely so that you can enter every contest that comes along, but rather that you might become just a little more informed as to just how many contests are conducted. Perhaps someone from one of the Divisions might like to take up the challenge and produce a substantial case to be presented to the next Federal Convention to the effect that there really are too many contests on our bands. I know that I don't have time to keep track of them all. I even had difficulty trying to provide some amount of help to Ken VK3AH, who is constantly making a valid effort to keep a yearly calendar.

Time permits me no further comment this month, so you might breathe a sigh of relief at that after all, be more fun to live such a carefree life in the fashion that he does.

Good luck to you in the coming events and watch out for our next main item which is the 1986 Novice Contest, to be held in June. It could be quite an interesting one this year.
**VK4 High Frequency Section A (Phone) Call Sign**

<table>
<thead>
<tr>
<th>Check Log was received from VK4s RX; BG; and YN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
</tr>
<tr>
<td>BUA 637 ABX</td>
</tr>
<tr>
<td>QX 600 BAR</td>
</tr>
<tr>
<td>4JF 433 JSA</td>
</tr>
<tr>
<td>ADD 543 AJJ</td>
</tr>
<tr>
<td>SU 376 PWS</td>
</tr>
<tr>
<td>DK 333 SSX</td>
</tr>
<tr>
<td>DJ 325 RRX</td>
</tr>
<tr>
<td>MX 320 LLX</td>
</tr>
<tr>
<td>TX 299 FNX</td>
</tr>
<tr>
<td>9B 280 AJU</td>
</tr>
<tr>
<td>NOD 253 NF</td>
</tr>
<tr>
<td>ZX 200 AGL</td>
</tr>
<tr>
<td>BC 199 BPA</td>
</tr>
<tr>
<td>GZ 186 CO</td>
</tr>
<tr>
<td>Check logs were received from VK5s HM; ANW; AX; ALD; BXL; and FX</td>
</tr>
</tbody>
</table>

**VK5 High Frequency Section A (Phone) Call Sign**

| BN 184 GZ                                  |
| AGX 157 ATU                                |
| UM 143 FXX                                |
| 10B 108 HO                                |

**VK5 Very High Frequency Section B (CW) Call Sign**

| JG 230 DJJ                                |
| KV 231 WPM                                |
| KJ 217 RVX                                |
| ZH 173 FHN                                |
| MX 159 VXR                                |
| BX 152 ZXX                                |
| BPA 149 TCX                               |
| KAC 142 APX                               |
| Check log was received from VK5FSX |

**VK6 High Frequency Section B (CW) Call Sign**

| Score                                        |
| DI 84                                       |
| HAT 38                                      |

**VK7 Very High Frequency Section A (Phone) Call Sign**

| JAG 110                                    |
| JX 74                                      |

**VK8 High Frequency Section A (Phone) Call Sign**

| Score                                        |
| L0 92N                                     |
| L0 20349                                   |
| L0 20349                                   |
| L0 185                                   |
| N 133                                      |

**Very High Frequency**

<table>
<thead>
<tr>
<th>Name/No</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>L01D35</td>
<td>358</td>
</tr>
<tr>
<td>L01D35</td>
<td>358</td>
</tr>
<tr>
<td>Greg Fullam</td>
<td>358</td>
</tr>
<tr>
<td>David Owen</td>
<td>152</td>
</tr>
</tbody>
</table>

**Rules:**

1. **DIVISIONS:** There will be TWO divisions — a 24-hours and b 6-hours. In each division the operation must be continuous within the time period allocated for the contest.

2. **SECTIONS:** In each division there will be separate sections as follows:
   a) Portable Field Station, transmitting phone, single operator
   b) Portable Field Station, transmitting CW, single operator
   c) Portable Field Station, transmitting phone, multi-operator
   d) Portable Field Station, transmitting CW, multi-operator
   e) Portable Field Station, transmitting open, single operator
   f) Home Transmitting Station, emergency powered

3. **STATION DEFINITION:** A portable field station is one which operates from a power supply which is independent of any permanent installation. The power supply must be fully portable, ie batteries, solar panels, wind or motor generators. A station located in an automobile and completely self-contained, apart from antennas, is classed as being portable if the automobile is considered to be a part of the station. A single operator station is one where the work involved in setting up the station is carried out by one operator and where this operator is the one and only operator. This does not, however, preclude the operator from having such minimal support as a log keeper, provision of food and drink, etc. This definition includes a Club Station using a single operator with massive support, in competition with stations which are set up and operated by an individual operator in the normal sense of the word.

4. **INSTALLATION:** No radio apparatus, including main antennas, feeders, cables, etc, may be erected on the site more than 24 hours before the contestant’s begin/operating.

5. **BANDS:** All amateur bands may be used with the exception of 10, 18 and 24MHz bands.

6. **CONTACTS:** Cross band contacts are not permitted. Cross mode contacts are permissible, however they will count only as phone contacts for scoring purposes.

7. The size of any portable field day station shall be restricted to approximately that of an 800 metre diameter circle. The size of any portable field day station shall be restricted to approximately that of an 800 metre diameter circle. The size of any portable field day station shall be restricted to approximately that of an 800 metre diameter circle. The size of any portable field day station shall be restricted to approximately that of an 800 metre diameter circle.

8. **MULTI-OPERATOR STATIONS:** Such stations will provide a separate log for each band. Only one transmitter may be used on a given band at any one time, be it operating in a phone or CW mode, only one call sign may be used from a multi-operator station.

9. **NUMBER EXCHANGE:** The exchange between stations will consist of a number/letter combination comprising the RS/T report as applicable, followed by a serial number commencing with 001 and increasing by one for every contact. Should the number 999 be reached the series must then be re-commenced at 001. Following the serial number, a letter must be added indicating the Section (a) through (i) in which the station is operating. e.g Numerical + 001 by a multi-operator station transmitting phone for the first contact would be 59001. Both serial numbers sent and received must be recorded in the check log.

10. **SCORING:** For Portable Field Stations — CONTACTS WITHIN AUSTRALIA:
   a) Portable/Mobile outside entrants call area — 20 points
   b) Portable/Mobile within entrants call area — 15 points
   c) Home Stations/Section H outside entrants call area — 10 points
   d) Home Stations/Section H within entrants call area — 5 points

   e) Home Stations/Section I outside entrants call area — 10 points
   f) Home Stations/Section I within entrants call area — 5 points

**AMATEUR RADIO, February 1986**
CONTACTS OUTSIDE AUSTRALIA:
g. Contacts with overseas stations, i.e. other than
VK — two points.

CONTACTS WITHIN AUSTRALIA:
a. Portable/Mobile outside entrants call area — 15
points
b. Portable/Mobile within entrants call area — 10
points
c. Home Stations/Section H irrespective of call
area — five points
d. Home Stations/Section I irrespective of call
area — one point

NOTE: Home Stations/Emergency Powered
must operate independently of mains power. Such a
proviso serves to further the aims of the WIA to
prepare stations for emergency situations.

For Home Stations/Mains Powered —
a. Portable/Mobile outside entrants call area —
10 points
b. Portable/Mobile within entrants call area —
five points
c. Home Stations/Section H irrespective of call
area — five points
d. Home Stations/Section I irrespective of call
area — one point

CONTACTS OUTSIDE AUSTRALIA:
a. Portable/Mobile outside entrants call area —
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area — five points
d. Home Stations/Section I irrespective of call
area — one point

BREAKING NEWS
AMBULANT RADIO.

NOTICE: See below

Petroleum derivatives.

When these rules and regulations are
in excess of five unmarked duplicates will be
automatically disqualified.

Entries must be received by 21st April 1986 and
be sent to RSGB HF Contest Committee, PO Box
73, Lichfield, Staff, WS13 6UJ England.

RTTY JOURNAL CONTEST
This is the fifth RTTY contest sponsored by the
Radio Society of Great Britain in conjunction with 73
MAGAZINE and will be held from 0000 to
2400UTC, 22nd February 1986.

The same station may be worked once on each
band. Single operator stations are limited to 16
hours on each band and multi-operated stations
for the full 24 hours. Off times must be at least 30
minutes each and must be indicated in your log.

CLASSES: Single operator and multi-operator;
station transmitter. Single and all band, 10-80
metres.

EXCHANGE: RST and a consecutive QSO
number.

SCORING: Five points for contacts with We and
Vs, 10 points for all other contacts. One
multiplier point for each US state (48), VE
province/territory, and DX country worked on each
band.

FINAL SCORE: Total QSO points times the sum of
the multipliers from each band.

AWARDS: Certificates to the top scorers in each
contest. Details will be published in the May
edition of 73 MAGAZINE.
Use a separate log sheet for each band, a dupe and summary sheet, and a multiplier check sheet. Indicate equipment and power used.

Mailing deadline is 22nd March 1986 to The RTTY Journal, 1155 Arden Drive, Encinitas, CA 92024.

CQ WW 160 METRE SSB CONTEST
To be held from 2200UTC 21st February to 1600UTC 23rd February 1986.

There are no changes from last year's format for this contest.

EXCHANGE: Signal report and QTH (no QSO serial number).

SCORING: Contacts with stations within own country count two points; with stations in other countries but the same continent, five points; with stations in other continents, 10 points.

The multiplier remains the same, each US state (48), Canadian areas (13) and DX country. (US and Canada are not country multipliers).

Mailing deadline is 31st March 1986 and logs should be sent to Don McClenon N4IN, 3075 Florida Avenue, Melbourne, FL 32904 or 76 N Broadway, Hicksville, NY 11801.

73, Ian VK5QX

Further to the Honour Roll, which began on page 57 last month as a result of the Editorial in November magazine.

Ray Kilby VK7RK, is another amateur who has been a member of the Institute for fifty years. Ray borrowed the WIA Badge Block to incorporate it on his QSL card in 1935, and has been a continuous member since that time.

Ray has always held the VK7RK call sign since licensed and has remained in the Launceston area during his amateur days.

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- Kenwood
- Icom

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- Pierce Simpson
- Uniden
- Philips
- Icom
- Sawtron
- etc

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- Monitors
- Modems
- Software

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REPAIRS AND CHANGEOVER SERVICE AVAILABLE
TRADE ENQUIRIES WELCOME

TEST EQUIPMENT — LARGE RANGE OF HIGH QUALITY SECOND-HAND GEAR: HEWLETT PACKARD, TEKTRONIX, MARCONI,
BOONTOON, B W D, BRUEL & KJAER, GENERAL RADIO, FLUKE, ATC, etc.

WE SERVICE WHAT WE SELL

AMATEUR RADIO, February 1986
NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.669MHz - Summer: 7.064MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.030MHz

AMSAT SW PACIFIC
2200 UTC Saturday
21.280/28.878MHZ
2200 UTC Saturday
AMSAT SW PACIFIC
OSCAR-10 from your QTH, along with other
you receive the computer, you simply turn it on,
so that your computer can be personally
for $70.00, made payable to the WIA (SA Division),
complete with software for OSCAR-10, written by
Dr Karl Meinzer DJ4ZC. Along with your cheque
include the computer, you simply turn it on,
the six-
compendium of the nitty-gritties that are relevant
broadcasts.
in some WIA Divisional
information is also included in some WIA Divisional
from friends in Australia, indicate that they too
overseas amateurs, who have received copies
success within Australia, and now comments from
'85 AMSAT column, is still open. The response to
by surprise. Consequently, there were some
‘85 AMSAT column, is still open. The response to
by surprise. Consequently, there were some
would like something similar in their own
countries.

ACKNOWLEDGMENTS
Contributions this month have been received from
Bob VK3ZBB and Graham VK5AGR.
Acknowledgement for the information relating to
the UoSAT satellites, which has been gleaned
from various UoSAT bulletins is also duly given to
the UoSAT team.

AMSAT-AUSTRALIA NEWSLETTER
Graham VK5AGR, the National Co-ordinator of
AMSAT-Australia is now producing a monthly
newsletter containing updated satellite news,
orbit predictions, Keplerian data, and operating
hints and techniques. The objective of the
newsletter is to keep the amateur populous
informed on the latest information available, and
in other relevant orbital data.

HAND-HELD COMPUTER OFFER
The offer, previously published in the November
AMSAT-AUSTRALIA NEWSLETTER
by Graham VK5AGR, as above.
For those new readers to this column who do
not have access to the November issue of
Amateur Radio, the offer is for a Sharp PC-1246,
complete with software for OSCAR-10, written by
Dr Karl Meinzer DJ4ZC. Along with the hardware
for $70.00, made payable to the WIA (SA Division),
also include your QTH's Latitude and Longitude
so that your computer can be personally
programming by AMSAT-Australia. Hence, if you
have ordered the computer, you simply turn it on,
follow the simple instructions, and you will be
given beam Azimuth and Elevation headings to
OSCAR-10 from your QTH, along with other
relevant orbital data.

OSCAR-10 APOGEEs
February 1986

<table>
<thead>
<tr>
<th>DAY</th>
<th>ORBIT U.T.C</th>
<th>#</th>
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</tbody>
</table>

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AMSAT engineers have confirmed earlier operations or overall spacecraft longevity developed. The fault will have no effect on AMSAT-OSCAR-IOIHU MEMORY FAULT according to W3GEY.

This offer is a service to you, the satellite communicator, by AMSAT-Australia, and a right bargain, at that, if the initial response to the offer was any indication.

AMSAT-OSCAR-10 IHU MEMORY FAULT

Several weeks ago, engineers began to notice an increase in the number of hits experienced. It was unclear, at the time, whether they were due to soft errors or one of several types of hard errors. A diagnostic software routine, designed by DJ4ZC, recently confirmed, however, that the errors are hardware-based. The fault has been identified in specific memory locations, Hex 0781 and 3D81. W3GEY points out that it is quite likely the fault lies in adjacent memory cells; adjacent real estate on the silicon memory die, itself. This could be due to either a latent manufacturing defect or the impact of a heavy particle. The area of memory affected is normally allocated to data rather than operating system so the overall prognosis is excellent.

The memory chips, 16k NMOS devices, were modified by AMSAT to reduce radiation susceptibility. The modification included a Tantalum metal slab on the chip and a brass enclosure. Nevertheless, an energetic cosmic ray, or the debris resulting from one can pass through many metres of lead, according to AMSAT.

Identification of a specific failure site by DJ4ZC eliminates several significantly more worrisome possibilities. Indeed, the error correcting methods chosen were designed to accommodate these anticipated, radiation-induced incidents quite well and the system seems to be working.

AMSAT-OSCAR-10 OPERATIONS

The operating schedule of AO-10 can change at short notice when attitude changes to compensate for approaching eclipses are warranted. In addition to monitoring the AO-10 beacon for early word on any changes, check into the AMSAT-Australia net each Sunday evening (times are at the head of this column).

In recent weeks, the Net Controller, Graham VK5AGR, has been conducting an auxiliary Sunday net on OSCAR-10, location and schedule warranted. In addition to monitoring the AO-10 beacon for early word on any changes, check into the AMSAT-Australia net each Sunday evening.

UOSAT SPACECRAFT OPERATIONS

DCE MESSAGE SYSTEM VERSION 2

In January 1985, W4Z2IA/VE3 and NK6K developed DCE Message System Version 1 software. This software was provided a way to use the DCE for the forwarding of short messages. It was rushed to completion and used to demonstrate the PACSAT concept at the Pacific Telecommunications Conference in Hawaii. Now, after two weeks working long hours at the UoS, NK6K and K8KA have written and tested, spacecraft and ground-station software for DCE Message System Version 2.

Version 2 will provide a solid foundation for more DCE tests, reliable demonstrations of low-orbit store and forward message systems, and perhaps some "production use" of the DCE to provide long distance amateur radio digital communications. Toward these ends, Version 2 supports several ground-station commands, uses the full 8 kbytes of DCE memory can handle messages up to 16 kbytes long, and can be used by either full or half-duplex ground-stations.

DCE software running on the BBC micro-computers at UoS can exercise all of the functions of the DCE, and will provide a basis for ground-station software development on other computers.

Receiving stations, that are not within the satellite footprint of a DCE ground-station, will still be able to monitor DCE activity. When the DCE is idle, it transmits "title frames", which are used by either full or half-duplex ground-stations.

DCE title frames, or T-frames, are sent in the most errors so as to avoid any serious consequences. The satellite is completely under computer control and any uncorrected software error could be devastating. The system is also designed to count the number of times the error-correcting feature has been used. This count comprises an index to the number of errors incurred.

This offer is a service to you, the satellite communicator, by AMSAT-Australia, and a right bargain, at that, if the initial response to the offer was any indication.
same format as other DCE frames, as described below, and they contain a message number and the first line of text from the message.

**GENERAL FORMAT OF DCE FRAMES**

DCE frames all share the following format:

`<10h> <03h> <cmd> <cmd not> <data length> <data> <crc>`

Each byte is sent as an asynchronous character with eight data bits and no parity. Frames are preceded by several SYN bytes `<16h>` for modem synchronisation.

`<cmd>` — a single ASCII character specifying a DCE command
`<cmd not>` — the inverse of `<cmd>`. Can be calculated by `<CMD> XOR FFh` or by `2^8 minus `<cmd>`
`<data length>` — a single byte giving the length of the `<data` portion in bytes. Data length is between 0 and 128 bytes.
`<data>` — `<data length>` bytes of command data. This data can be either ASCII characters or binary bytes
`<crc>` — two bytes of cyclic redundancy check. The CRC is a type of checksum, and it covers everything from `<cmd>` to the end of `<data>`.

**STUFFING `<10h>` BYTES**

In order to assure that `<10h>` and `<03h>`, the beginning of frame marker, does not get transmitted in the data field, all `<10h>` bytes, other than the one at the beginning of a frame are doubled. Repeat: during transmission, `<10h>` is converted to `<10h> <03h>`. When receiving a frame, after the first `<10h>` and `<03h>` has been detected, all `<10h>` sequences should be converted to a single `<10h>`.

**CONTENTS OF A TITLE FRAME**

The `<cmd>` in a title frame is `T`. The contents of the `<data>` portion of a title frame are as follows:

- **Message number**: 1 byte. If the first bit of this byte is set, the message is not complete, and the message title may be invalid.
- **Message length**: 1 byte. This is the length of the message that is stored on the DCE. It is not the length of this title frame.

Multiply by 64 to get the message length in bytes.

- **Call sign of the station using DCE**: nine bytes of ASCII. If no one is using the DCE, then this will be nine blanks.

**PHASE 3-D FUNDING**

Most readers of this column would be aware that the objective of the AMSAT-Australia Newsletter is to provide an avenue of raising funds for a future space project. Similarly, those people who utilise the Software Service and in appreciation make a donation for that service, are also providing funds towards that space project. Over the last 12 months, an amount of money has been gradually accumulated towards that objective that Graham VK5AGR first envisaged when he instigated the Newsletter. Therefore, following discussions with Karl DJ4ZC, on the status of Phase-3D, Graham is intending to pass a percentage of the proceeds to AMSAT-DL as an initial donation, for an item of hardware for Phase-3D. As yet, it is unknown what area this donation will specifically fund, however it is hoped that with continued support for the Newsletter, and donations for the service provided

**CONTENTS OF A TITLE FRAME**

The following Launching Announcements have been received:

- **1985-079A**: Cosmos 1680  Sept 4  USSR
- **1985-080A**: Cosmos 1681  Sept 6  USSR
- **1985-081A**: Sovuz T-14  Sept 17 USSR
- **1985-082A**: Cosmos 1682  Sept 19 USSR
- **1985-083A**: Cosmos 1683  Sept 19 USSR
- **1985-084A**: Cosmos 1684  Sept 24 USSR
- **1985-085A**: Cosmos 1685  Sept 27 USSR
- **1985-086A**: Cosmos 1686  Sept 27 USSR
- **1985-087A**: Intelsat VA F-12  Sept 29 ITSO
- **1985-088A**: Cosmos 1687  Sept 30 USSR

**2. RETURNS**

During the period thirty-five objects decayed or returned including the following satellites:

- **1983-091A**: Cosmos 1649  Sept 26
- **1985-043A**: Sovuz T-13  Sept 26
- **1985-068A**: Cosmos 1673  Sept 19
- **1985-076A**: STS 511  Sept 3
- **1985-077A**: Cosmos 1678  Sept 12
- **1985-080A**: Cosmos 1681  Sept 19

**3. GENERAL**

As at Sept 9, 1985, 1047UT; 1966-100A ATS 1 was reported at 121.600° West, Inclination 11.808°.

**SATELLITE ACTIVITY FOR PERIOD 31 AUGUST TO 30 SEPTEMBER 1985**

**1. LAUNCHES**

The following Launching Announcements have been received:

- **1985-089A**: (16107) Cosmos 1688  Oct 2  USSR
- **090A**: (16110) Cosmos 1689  Oct 3  USSR
- **091A**: (16112) Molniya 3-26  Oct 3  USSR
- **092A**: (16115) STS-51J  Oct 3  USA
- **092B**: (16116) USA-11  Oct 3  USA
- **092C**: (16117) USA-12  Oct 3  USA
- **093A**: (16129) USA-10  Oct 9  USA
- **094A**: (16138) Cosmos 1690  Oct 9  USSR
- **094B**: (16139) Cosmos 1691  Oct 9  USSR
- **094C**: (16140) Cosmos 1692  Oct 9  USSR
- **094D**: (16141) Cosmos 1693  Oct 9  USSR
- **094E**: (16142) Cosmos 1694  Oct 9  USSR
- **094F**: (16143) Cosmos 1695  Oct 9  USSR
- **095A**: (16169) Cosmos 1696  Oct 16  USSR
- **096A**: (16177) PRC-17  Oct 21 China
- **097A**: (16181) Cosmos 1697  Oct 22 USSR
- **098A**: (16183) Cosmos 1698  Oct 22 USSR
- **099A**: (16187) Molniya 1-65  Oct 23 USSR
- **100A**: (16191) Meteor 3  Oct 24 USSR
- **101A**: (16198) Cosmos 1699  Oct 25 USSR
- **102A**: (16219) Cosmos 1700  Oct 25 USSR
- **103A**: (16220) Molniya 1-66  Oct 28 USSR
- **104A**: (16230) STS-61A  Oct 30 USA
- **104B**: (16231) Glomex  Oct 30 USA
- **010B**: (15543) USA-B  Jan 24 USA
Notes:

* 85-010A USA-8 was omitted from earlier lists. The satellite was placed in geosynchronous orbit.


85-104A STS 61A was crewed by H.W.Hartsfield, S.R.Nagel, B.J.Dunbar, J.F.Buchli, G.S.Blu ford, E.Messerschmid, R.Rurrer and W.Ockels. Amateur Radio was carried on this mission.

85-104B Glomr is a Global Low Orbiting Message Relay.

2. RETURNS.

During the period 45 objects decayed or returned including seven satellites.

Thumb Nail Sketches

HAROLD BREMMERMAN VK4HB
Harold was particularly well-known as the popular station manager of VK4WIA for many years. He was also Secretary and Foundation Member of the Brisbane DX Club, and he also served on the VK4 Council.

For these activities and other support of the VK4, Harold was awarded Life Membership of the VK4 Division.

By profession he was an engineer, and was holder of a City and Guilds Certificate, and Life Member of the IREE. Harold was also skillful with tools and instruments and his technical knowledge and administrative ability made him an asset to amateur radio.

Born in London in 1903, Harold obtained his First Class Radio Certificate in 1918. He moved to Australia in 1927.

Television interested him and he constructed a "Nipkow" disc which he declared redundant after a visit to England in 1938, where he saw the trend.

Harold retired about 20 years ago, but still retains an interest in Lodge work. Blondie, a familiar figure with Harold at earlier Conventions leads a quiet life these days.

JOHN ATKINSON VK4RZ (ex VK2RZ, ex ZL1RT)
John was born at Blackburn, in the United Kingdom, in 1906, and came to Australia in 1912. Both coming to Australia, and becoming a radio amateur, were by chance.

The TITANIC to USA and Canada was more expensive than the slower AFRIC to Australia, so to Australia the family came, only to learn that the TITANIC had sunk, but that many had been saved by use of the ship's radio.

Not long afterwards John, near Pennant Hills Radio, obtained access to a Ford coil and battery and transmitted a radio signal while receiving via a piece of lead across two "Gem" razor blades. Twelve-year-old John, and a mate, with an intercom across the street, also constructed a more sophisticated transmitter and receiver and were able to listen to Chas McCluran, the only 'B' class station with a call sign in Sydney.

Penurious John successfully applied for, and obtained, a messenger boy post with Sid Colville, ex XQF, and Moore's Radio Shop. Remuneration was 10/- and transport from Parramatta was two shillings which left eight shillings to 'keep the home fires burning'.

John was with C&M for two periods and obtained access to a Ford coil and battery and transmitted a radio signal while receiving via a piece of lead across two "Gem" razor blades. Twelve-year-old John, and a mate, with an intercom across the street, also constructed a more sophisticated transmitter and receiver and were able to listen to Chas McCluran, the only 'B' class station with a call sign in Sydney.

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John was with C&M for two periods and became friendly with 'many-of-note', including Sir Isaac Isaacs who was very proud of his library.

Apart from selling receivers, C&M supplied basics for broadcast stations and John, as VK2RZ, remembers Clif VK4CG, obtaining parts for 4GR Toowoomba.

During 1926-28, John, with Sid as leader, operated the first equipment installed in an aircraft — both were members of the Aero Club. They used a battery receiver and a small prop driven 250V generator for transmitting. There was no long distance reception due to lack of shielding.

John helped Wally VK2SA fit Sydney police equipment in a van. The equipment was mounted in the prisoners area and the first offender caught when told of how the radio had assisted in his capture, put his boot through all the unprotected tubes.

John opened his own business in New Zealand and operated with the call sign ZL1RT. Later he moved to Gatton, Queensland, and finally to the Gold Coast where his present house was built to cater for amateur radio, with his 'shack' perched some 12 metres above ground and also above the main roof.

The first SSB DXpedition to Tonga was carried out by John, who 'kept log' whilst three Tongans filled out QSL cards.

John, who has been retired for many years, and Joan, who is about to retire, are enjoying good health and we look forward to hearing John on the bands for many more years.

Peter Brown VK4PJ
16 Bede Street, Balmoral, Qld. 4171

by the Software Library, will allow AMSAT-Australia to make further donations towards Phase-3D and other future satellite projects and programs.

d Colin VK5J

CAUTION, IT MAY BE LETHAL
A letter from John Wilkinson VK6JJ, points out that advice in the article in December's magazine, page 28, which was reprinted from RADCOM July 1982, on the subject of PCBs may be hazardous. John provided a copy of an article in HAM RADIO, December 1983 — that stated that low temperature burning of PCBs can produce DIOXIN, the most poisonous and deadly substance that the human race has created. The HAM RADIO article is authoritative and rather frightening.

Do not attempt a flame test for PCBs unless you fully understand their chemistry and have correct safety equipment.

Peter Brown VK4PJ
16 Bede Street, Balmoral, Qld. 4171

by the Software Library, will allow AMSAT-Australia to make further donations towards Phase-3D and other future satellite projects and programs.
ALARA CONTEST

Well, I for one "had a ball", finally emerging from
the shack somewhat dazed, bleary-eyed, and
gravel-throated, clutching a sheaf of papers in my
hot little hand. I was greeted by the male members
of the household with sighs of relief, and such
remarks as "At last" and "What time's dinner?"
Though 10 and 15 metres were almost a write-
off, (I only managed three contacts on 15, and
none at all on 10) conditions on the lower bands,
particularly 80 metres, were a decided improve-
ment on 1984.

We were most appreciative of the many menfolk
who joined us in making this fifth contest the best
yet, sparing no effort to give us valuable contacts,
and those unsung heroes — the OMs (mine
among them) who minded the children, cooked
the meals, washed dishes, and made frequent
cuppas so that we could participate to the fullest.
This time was had by all.

There were two disappointing aspects:
the scarcity of DX contacts, no doubt due to
lack of propagation. Very few were heard, apart
from some of the ZLs
and the lack of novice YLs on CW for the Mrs
McKenzie Trophy. One OM, in particular, hunted
through the bands looking for novice YLs to whom
he could give a CW contact, without success.

Hopefully we will have the results by next
month's issue of Amateur Radio. Marlene
VK2KFO, has been burning the midnight oil to get
them ready. She reports that logs started arriving
on the 13th November, the first three being from
OMs, VI5GZ, VK2CD8 and VK4BRZ respectively.

By 1st December, 22 logs had been received —
13 from ALARA members and nine from OMs,
and ten of the OMs in particular — thanks to the OMs for
participating.

NEW MEMBERS

Welcome to two new members, namely Nancy
VK2NPG, who joined on 7th November 1985, and
Betty KA50NE, who joined on 20th November
and was sponsored by VK4JFA.

WIA 75th ANNIVERSARY

Two ALARA members, Mavis VI3KS and Mavis
VK3BIR were present as official ALARA represen-
tatives at the WIA 75th Anniversary Dinner. Both
reported that the event was a great success, and
was enjoyed by all.

WICEN News

On Saturday, 14th December 1985, the Central
Coast WICEN was activated to take part in a
search of the coastline near Avoca, for a
fisherman who was washed into the sea the
previous night.

Three walking parties set out, accompanied by
WICEN operators who were equipped with two
metre hand-held units and communication was
provided between the search areas and the Police
Command point on a nearby high point, about
1.5km from the coast. One operator was able to
communicate on most occasions using only low
power (about 100mW) yet the Police and VRA low
band portables running around one watt were
generally unreliable over the same path. (Perhaps
two metres and probably high band (148- 174MHz)
signals are more readily propagated in the type of
terrain encountered than those at low band
(70-85MHz)).

The search was scaled down after land, sea and
air searches failed to find any trace of the missing
person.

Operators taking part were VK2s TV; BJC;
ZCZ; ZCO; DET, TS, DBC, KAL, YFF and BJC.

Condensed from SMOKE SIGNALS Volume 14 Number 9

EARTHQUAKE APPEAL

At the conclusion of a three-hour concert at the
Sydney Opera House, to aid the Mexican
Earthquake Victims, the Ambassador for Mexico,
HE Dr Jesus F Demene V, honoured Australian
radio amateurs by presenting a plaque to Sam
Voron VK2BVS. Also on stage with Sam were Ken
Gallagar, Fred Greening VK2DZL and Martin
Lansdown VK2PJW.

Operators who offered their services for this
operation were VK2s TV, BUQ, 2CZ, ZCO, DET,
TS, DBC, KAL, YFF and BJC.
KNOW YOUR SECOND HAND EQUIPMENT

This month will be our last look at Yaesu for the present time. There are still several early models to look at, but these are not very common and, of course, there are many newer pieces, which are probably well-known. We will look at them in due course, but for this issue we will look at the FT-101 in its various forms.

Without a doubt, this was the most famous series of transceivers ever produced, with the first 101 being introduced to the Australian market in late 1971. It was a much improved version of the FTDX-100, which was covered a few months ago in this column.

As all FT-101 transceivers had similar specifications, we will look at the common features first, and then check on the changes that took place as the series evolved.

The FT-101 was, in the first instance, an 80 to 10 metre transceiver, with operation on USB, LSB, CW, and AM. It was a self-contained unit with AC operation from 100 to 234 volts, and portable or mobile operation from 12 volts DC. Each band had a 50kHz tuning range, 11 metre band used four positions of the band switch. Operation from 27,000 to 27,500MHz, 11 metre operation, was provided on all but the last of the FT-101E series.

Some important facilities were included and these included VOX, Crystal Calibration, 1kHz Dial Calibration, Noise Blanker, and provision for an optional CW filter.

The circuit was all solid-state, except for the transmitter final stages which employed a 12BY7 driver and two 6JS6s in the final. The receiver circuitry was changed from time to time with the transmitter final stages which employed a 12BY7 driver and two 6JS6s in the final. The receiver circuitry was changed from time to time with the noise blanker getting quite a lot of attention. Receiver front-end-overload was always a problem with the 101s and as it later evolved, the problem was in the IF section. Many modifications were published over the years, some good and some not so good. At the conclusion of this article several that were published in AR are itemised.

The first 101 can be identified by the two three position switch here for MOX/PTT/VOX. Early models are usually considered to be serial number 25000 and under, but there are at least two versions that come into this category. In Australia, the latter models or the early series became known as the series two. These had the 160 metre band included as a standard feature. Also an improved noise blanker and a final stage cooling fan. One quick way of identifying the early models is the colour of the front panel surround. This was silver until the introduction of the 101B, when it was changed to light grey.

The 101B arrived on the market around August 1974. The 'B' had an upgraded SSB filter and further improvements to the noise blanker. The first 101E arrived in June 1975. There were two improvements in this model. Firstly, an RF speech processor was included and the front panel slide switches were replaced with easier to use toggle switches. The original RF processor proved to be rather hard to use, as there was no front panel adjustment. As the drive requirements changed from band to band, it was necessary to dive into the chassis to alter the preset control.

The second series 101E overcame this problem by providing a processor level control, concentric with the clarifier knob. Improvements were also made to the processor itself, which gave better clipping action with lower distortion. The final model of the 101E was the same in all respects except that the 11 metre band was removed. In the USA this unit was known as the FT-101F.

Yaesu made some changes to the noise blanker in the 'E' series that did not please all customers.

A Series to Help You Identify Amateur Equipment

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverley, Vic. 3150

NOW AVAILABLE

The Historical Cassette which was mentioned in previous WIA 75th Anniversary News Columns, is now available to members.


Available from Divisional Offices for $7.00 plus post and packing.
## Pounding Brass

**KEYS AND KEYERS (Part II)**

Last month we talked about straight and mechanical keys and the 'manual keyer'. Let us continue with electronic keyers and paddles. The simplest electronic keyers rely on a single paddle to drive them. When it is swung to one side, a series of dots is generated; dashes result from a swing to the other side. This sort of paddle is called a side-swiper, after the mechanical keyers.

The length of time the paddle is held over determines the number of dots or dashes generated.

The iambic keyer represents the state of the art at the present time. Any number of frills, bells and whistles are available, but as a kecying method, iambic is of tremendous significance. An iambic keyer actuates both the dot and dash paddles, but when both paddles are held over at the same time, the iambic keyer generates a pattern of alternating dots and dashes. That is where the name iambic comes from. I think it is usually used in poetry to describe a metre, or rhythm consisting of a pair of syllables, the second of which is stressed. For the record, if iambic meter is reversed, with the first syllable stressed, it is dactylic, and an iambic keyer sends dactyls if the dash lever is actuated in advance of the dot lever! With a view toward clearer understanding, here is an example of an iambic meter: "In days of old, when knights were bold..." A technique, called scansion, is used to analyse the meter, and the line breaks up like this: In days of old, when knights were BOLD... The rhythm is often described as "de dum de dum de dum de dum." or by extension, dit dah dit dah dit dah dah go it ? To send using the CK1 keyer requires 12 separate up and down movements. To send it iambically (they depress one paddle at a time and don't use the combinations available with a squeeze), and then find their way into iambic keying, as time goes by.

An iambic keyer is driven by dual paddles, and there are various ways to go about engineering them. The simplest method consists of two paddle keys. A more advanced principle is used in less rugged paddles which are often used where paddles are built into the keyer.

More esoteric, but a delight to use, is the Bencher paddle. Each of the two paddles has its own post, so the contacts meet flush, rather than a flat contact meeting a round centre post, and they are capable of very fine adjustment. The Bencher is not cheap, but then again, it is not a lot more expensive than the others, and you get what you pay for.

As far as the keyer itself is concerned, the best introduction is to build one. There is a Healthkit keyer, but a less expensive alternative is based on the kit marketed by a local electronics firm, some years ago. It originated with WB4VVF in QST, and was later published in Electronic Exchanges. Unfortunately, the kit, as such, is no longer available, but you should be able to find the circuit board, the Galbraith paddle (GKI) and, I presume, the ICs, and other components are readily available. In the original design the paddle was built into the keyer. I prefer a separate paddle, so I put all the controls on the front panel, and later published in Electronic Exchanges. I modified the design to use a plug-pack for power, and put in a switch for speed control, rather than a pot, so selected speeds could be set quickly. It works very well and is capable of very fine adjustment. To set the keyer can be driven by a cassette recorder — an alternative, which seemed easier than building a memory for it. The paddle would be, by far, the most expensive part — other than that the whole thing should cost less than $20, plus a few hours to set up. If you are thinking of building a keyer, ready-made, there are dozens on the market to choose from. The basic iambic keyer circuitry has been reduced to one IC now, the Curtis 8044, and there is a Vibroplex paddle, with a complete keyer built into the base! There is another, the name of which could be misconstrued, which has the keyer attached in the base.

Beyond the basic keyer circuit, which gives you dot and dash memory, automatic spaces, and a variable speed and weight, the main attraction of more advanced keyers is memory. A memory is very handy during ordinary operations, but for contesting, it is almost mandatory. In choosing a memory keyer, you need to work out the size of the messages to be stored, and the ease of storing, editing, and using them.

Perhaps, the most advanced line of keyers on the market today is produced by Advanced Electronic Applications, of Lynnwood, WA in the USA. Their keyers are based on the MM2, and I believe to be seen to be believed. Featuring two microcomputers, the MM2 will act as a contest keyer, automatically generating serial numbers, as a beacon, sending messages to satellites, storing programmed intervals, and as a trainer, in addition to ordinary keyer functions. In trainer mode, the MM2 can be programmed to start at any speed between two and 98 WPM, and, after an elapsed time of 0.1 to 59.9 minutes, it will increase to any higher speed between two and 98 WPM. It will generate random characters, or words, but if you want to check progress, you can select one of ten starting positions for use with the Answer Book.

The AEA range also offers keyers with fewer of the MM2's features, such as the CK2 contest keyer, and the KT2 keyer/trainer. The "2" in the name represents the second version of the keyers, using CMOS circuitry for lower power consumption and longer memory. The "1" series have most of the features of the newer line, but are less expensive, if you can still find them.

## Spotlight on SWLing

Conditions on the higher frequencies have markedly improved lately, especially after our local sunset. The 21MHz band, in particular, has improved with many European signals coming through reasonably well. Signalement levels are not as good as they were last summer, but that is only to be expected at the Sunspot Minima.

As well, we have found that the lower frequencies are plagued by static and noise from all the summer storms we have been having.

## OPENINGS

I did also notice several good Sporadic-E openings from Europe on 10 and 12 MHz. I was surprised that my report turned up many years to reply, but it was worth it. The report I sent was to a Miami, Florida address I had been given. The station gave the call of "La Voz dell CID — Cuba Independiente y Democratica" and broadcast popular music which was interspersed with slogans. This station has been around for a number of years, buying air-time over various Latin commercial stations. However, it is not owned by La CID, but certainly using a clandestine operation for they

### CLANDESTINE OPERATIONS

Recently I received a QSL card from a clandestine station that I heard in 1984. The station took 19 months to reply, but it was worth it. The report I sent was to a Miami, Florida address I had been given. The station gave the call of "La Voz dell CID — Cuba Independiente y Democratica" and broadcast popular music which was interspersed with slogans. This station has been around for a number of years, buying air-time over various Latin commercial stations. However, it is not owned by La CID, but certainly using a clandestine operation for they

### NEW TALKBACK TIME

By the time we are reading this, these openings will have diminished and the propagation will have altered. By now, propagation to North and South America should have improved on 15 and 20 metres. The higher frequencies should start to drop off and LF signals from Europe should be coming earlier. I find that the propagation forecasts, prepared by Mike Bird for both Radio Australia's "Talkback" and "Media Network" over Radio Netherlands, are extremely valuable. They are easily understandable to the beginner, or to those further advanced. Incidentally, Radio Australia's "Talkback" is now aired at 1610UTC on Fridays and is repeated at 0310, 0810, or 1230UTC Saturdays over the usual RA channels.

were on 10.041MHz, well within the HF aviation allocations.

I thought that the station had rejected my report, as it was in English. I was aware that other listeners had obtained QSL cards for Spanish reports, which incidentally were sent to Central America. I was surprised that my report turned up 19 months later, but from Costa Rica. It came in a plain air mail envelope, minus any identification or return address. Inside there was a colourful card, with the CID logo and the basic details. On the reverse side were details of other CID transmissions. The QSL card was sent from a transmitter site, although various theories have been advanced, the common being either in Central America or within the USA.

I haven't heard it lately as it has been absent from 10MHz for about 12 months. I did hear it faintly earlier in the year, in the middle of the crowded maritime allocation on 6.30MHz. I presume they are still using various Latin commercial outlets. Yet now there has been an official "Clandestine" — Radio Marti with identical programming and target audience, utilising VOA facilities. Perhaps this is why "La Voz dell CID" is not heard often these days.

Well, that is all for this month. Until next time, the very best of 73 and good listening — Robin VK7RH.
Today I sat in front of my trusty typewriter, with a blank piece of paper and wondered just what I would write about this month. I think everyone who has ever attempted to put an article together has had this experience, and I am no exception. If I were a more methodical person, which I am not, I would have my thoughts in order before I start hitting the keys.

While watching television recently, a flaunter appeared on-screen playing a most delightful tune. As I watched, my mind was drawn back to earlier days and another flauster, Army Signalman Col Evans, playing Carnival of Venice. This was the first concert held for about 800 troops who had just arrived at the 67 mile post in the Northern Territory, after a tortuous two weeks trip from Strathfield, Sydney.

I well remember this concert — the first real-operative, under starlit skies with the smell of citronella and the buzz of mosquitoes — not only for the fact that there were no enemy bombers flying overhead, but, during Col’s rendition of Carnival in Venice, a large number of mailbags arrived with welcome news from loved ones. (The last I heard of Col was many years ago when he was a member of the ABC Orchestra).

Previously, I have written of other experiences in the Northern Territory, during the war, and I am about to describe another that occurred some time ago, whilst listening to Radio Australia, the medium wave relay for Darwin, Tennant Creek, and Alice Springs, I heard that Tennant Creek and Alice Springs are competing with each other to see which town can entice the most tourists to see Halley’s Comet, in Central Australia. I also read that Bill Peach, of television fame, is taking a party to see Halley’s Comet in the valley.

After the Northern Territory, I was stationed at Morotai Island, in the then Netherlands East Indies, and I would now like to write of my experiences there.

After some refreshers courses, vaccinations, etc, I eventually found myself at a Brisbane wharf for the journey north in the FREDERICK C AINSWORTH, a formidable looking warship from the United States of America. Once on board we were issued with live ammunition as we were to sail through enemy infested waters.

Firstly, we were kept below decks, but as soon as we had cleared the Brisbane River and were in the open sea we were allowed to see sunlight once again. We didn’t know where we were destined for but by observing which way the sun rose and set, and the approximate speed of the ship, it was possible to assume a rough estimate of where we were located, from day to day.

The FREDERICK C AINSWORTH headed through the Coral Sea towards Milne Bay, and it was whilst on this leg of the journey that I engaged the wrath of the Military Police. In the Coral Sea area, at intervals of about half-an-hour we saw two ships move across our track. Once on board we were aware of live ammunition as we were to sail through enemy infested waters.

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HADARC
This month's meeting of the Hornsby and Districts Amateur Radio Club is to be a Lecture plus Practical Demonstration of the Commercial High Speed Data Transmission System X25. It is anticipated that members will be able to bring along their own computers and participate in the demonstration.

From QUA, here is the news of HADARC Nov/Dcnd 1985

'DEVIL NEWS FROM THE NW BRANCH'
The Florians' broadcasts on RTTY are getting a lot of response, and there are quite a number of reports to hand.

The quick bending exercises conducted by John VK7ZPT have proved very popular (there were three classes last year), and it is hoped to conduct some more this year.

The branch has been looking into ways to cut costs in amateur radio. VK7WZ thought it would be handy to make boxes for projects and duly made a bending device for this purpose. Whilst he was visiting a local shade department he inquired of the fate of many washing machines which were destined for the rubbish dump. He was told he could take what he wanted and these became boxes suitable for amateur radio projects.

VK7KY has been fortunate to locate a source of old television receivers which are proving an invaluable money saver for components, and in some cases, some television cases can be used for shelving.

The picnic to Bells Parade, Latrobe, during November was a great success, particularly the cricket match which was held on the banks of the Mersey River.

Bob VK7NAI and his family together with John VK3ALM and his mother were welcome visitors to the event. John and his family touring Tasmania and welcomed the opportunity to meet the amateurs from the NW Branch.

Several video cameras were seen in operation so there will probably be an interesting film night at a meeting in the near future.

At the last meeting for 1985, the Annual General Meeting, ladies were invited to attend. It was pleasing to see nine wives present. Together with three visitors and 28 members and associates, it was good to see such a large attendance for the occasion. Visitors were VK4APQ, VK7ZFH ex VK5ZFH, and Daniel.

Officers read their reports for the preceding 12 months, and thanked members for their assistance and support.

The Branch Award, which is in memory of Joan Fox, was presented to Ron VK7RN, a member who worked so industriously for the Branch, and to Tony VK7AX, for the help he has given to the club.

Officers for 1986 are: President — Bob VK7G; Vice President — Ross VK7WP and John VK7KDR; Treasurer Bruce VK7MB; Secretary — Tony VK7AN; VICEN Co-ordinator — John VK7ZPT; Activities Officer — Greg VK7ZBT; RTTY — John VK7ZFH; Librarian — Terry VK7BV. There are two positions not filled, Youth Activity, and a member to look after the station.

Roe VK7CF, the old television receiver which is proving an invaluable money saver for components, and in some cases, some television cases can be used for shelving.

Bill has been a licensed amateur since 1978 and previously held the call signs VK2VCO and VK2KSWG. He is well-known on the HF bands, especially 60m and holds a Novice DXCC as well as the 60m Gold Badge. He is well respected

The Club had the use of the call sign during the CW Contest and during JOTA. The activity in the Contest was quite awesome trying to work the "dog-piles" for hours on end. Hundreds of CW signals, one on top of another were not easy to decipher.

During the majority of the contest, sub-barefoot power was used (less than 50 watts), as there was no record-breaking result, it gave almost 1000 amateurs, world-wide, the opportunity to work a special call sign, and in so doing, publicised the WIA.

The Club was thrilled with the results, as this was only the second contest entered and it was quite awesome trying to work the "dog-piles" for hours on end. Hundreds of CW signals, one on top of another were not easy to decipher.

During the majority of the contest, sub-barefoot power was used (less than 50 watts), as there was a problem with chronic television interference. (Operation was held at the OTH of VK3BPW, in Ouyen, where television reception is only marginal, as they are in a fringe reception area). There was also an eight-hour power black-out.

Due to the black-out, a generator was rigged up but this exploded the main transmitter — it was later discovered that the generator had vaultage spikes exceeding 900 volts! Coupled with massive power line interference, heaps of coffee, and even more paper work, in retrospect, it was a contesting experience of a lifetime.

VI3WI was VK3BPW and VK3CWB (operators), and VK2ER, VK3DMW and VK2KFQ (log-keepers).

NORTHERN CORRIDOR RADIO GROUP
Recently in the northern area of Perth, a number of amateurs banded together with the aim to forming some type of club. Unknown to them, another amateur group had made similar plans. Both groups suddenly discovered each other when they tried to book the same venue for meetings!

Surprised, but gratified by the similarity of aims, the groups joined forces and launched the Northern Corridor Radio Group (NCRG).

The NCRG meets every second Tuesday at the library foyer in Carnie Technical College, at 7.30pm. In the case of college/school holidays, meetings will be held in room 101. After meeting in the foyer, we can move to the lecture theatre, canteen, or garden, depending on the agenda and weather.

Meeting activities include videos, lectures, demonstrations, discussions, Morse classes, general chat-chats, and more. The group has also visited places of interest, one being a visit to radio 6WF and the regional shortwave station, near Hamersley. All gazed upward in awe at the base of the 182m (600ft) plus tower, and decided it would be nice to borrow for 160m in the next contest. The 50KW output valves looked decidedly unfriendly.

Another successful visit was to ABC Perth Radar, at Kalumunda.

A Christmas Barbecue was held at Yanchep National Park, 50km north of Perth, on 1st December 1985. An oval was booked for this enjoyable event.

The club has a permanent shack in the college and after careful negotiations, a 15m (50ft) mast has been acquired. A task force is presently devising plans for the mast, and an antenna rail system for the mast. It should be completed and operational by this time.

Erecting the Delta antenna for the RD Contest.
Rob VK6ZRE, Wesley and Steven do their share of operating during the contest.

The club call sign was portable for JOTA during a memorable weekend with Cubs, Scouts, Brownies and Guides at Sorrento, near the ocean. Propagation was bad but it didn’t dampen the excitement for the young people.

During the CQ World-Wide DX Contest, the group was again active. Although bad propagation and indifferent antenna performances were experienced, many countries were worked during an enjoyable weekend.

With the erection of our mast and proposed monobanders, the group will certainly become a force to be reckoned with during the coming international contests.

Compiled by Nick Morgan-Hobbs VK6AFK with photographs by Phil Hartwell VK6ABL

CENTRAL COAST FIELD DAY

The Central Coast ARC will be holding its 29th Field Day on the 23rd of this month. The Field Day is very labour intensive, so help is needed.

VK3RTY IS THE HEART OF MELBOURNE

The idea of having a RTTY repeater can be traced back about six years when a group of people, interested in teletype, began work on the project. For various reasons, and despite considerable effort put in by the group, the project dragged on and became somewhat of an embarrassment to the Eastern and District Radio Club (EDMRC).

In late 1982, the issue of VK3RTY was raised at an EDMRC committee meeting, and committee member, Ken Palliser VK3GJ, volunteered to take over the project.

The first thing Ken decided to do was use all microprocessor control, instead of the hard-wired logic system which was tried by the initial group. A solid-state transceiver was obtained and shielded to make it compatible with micro-control.

Ken re-designed the repeater control system and virtually the only part used from the earlier project was the digital-synthesised frequency control. He had a concept in mind on how the repeater should be micro-controlled and worked steadily to achieve success with an up and running VK3RTY, in November 1982.

During its trial period at Ken’s home in Mitcham, an eastern suburb of Melbourne, it was accessed by stations from throughout the metropolitan area. After a shake-down phase, VK3RTY was installed the following February on Mount Dandenong. It opened a new era on the RTTY scene and gave users of this mode freedom from being confined to simplex working on 146.600MHz. Users are in the greater Melbourne area, Geelong district and further away from Mount Dandenong (including Monow, in the LaTrobe Valley) using beam antennas.

VK3RTY was the first Australian repeater to have stored messages, which can be retrieved by anyone able to access it using Baudot code.

Many stations enjoy accessing the repeater for print-outs of the stored information which is regularly updated remotely, by Ken, using high speed data. They call up a menu which tells them what information is available, and the access codes needed to retrieve the messages. These pages are widely read and certainly keep RTTYers, and listeners, informed on local activities and news.

The VK3RTY Repeater situated on Mount Dandenong.

Ken Palliser VK3GJ, adjusts the VK3RTY equipment.

Available from the repeater, on command, are RY8s, Mark and Space Tones, Echo Test, and The Quick Brown Fox. These have helped, many to get their modem working efficiently and adjust their printers.

Those who initially cannot get into VK3RTY often ask a friend to activate the tests for them. Usually, soon after such an exercise, a new RTTYer is born.

In the long term, VK3RTY will have a Mail Box facility to enable users to leave messages addressed to others for later retrieval. Ken VK3GJ, has begun early work for this enhancement which will add a new dimension to the RTTY scene.

As technology develops, the man behind VK3RTY is certain to introduce further refinements in the future.

For his tremendous contribution to RTTY activity through VK3RTY, Ken was recognised by the WIA Victorian Division, in 1983, when he was awarded the Gadsen Trophy for Technical Achievement.

Contributed by Jim Linton VK3LCP

CLAIRVIEW RADIO CONVENTION

The Clairview Radio Convention, held on 9th and 10th November 1985, at the Golden Mermaid Caravan Resort, 210km north of Rockhampton, and was well-attended (53 attendees) for the second year in succession.

Amateurs, and their families, came from Hughenden, Emerald, Rockhampton, Mackay, Yeppoon, and Wunnu, near Brisbane. Max VK4BME, and his wife Gwen VK4VDE, extended their holiday to coincide with the Convention, whilst Jack VK4VAS, and Alma VK4VAR heard about the Convention and stayed at Clairview so they could attend.

The beach-front and caravan park provided an excellent location for Fox-hunts, which proved to be a popular activity for all attending. Ron VK4KEN, and Rob VK4TKA, constructed a two metre Fox with a 50mW transmitter housed in a black box for the event.

An unusual array of sniffer antennas and devices emerged from car boots, with some working better than others, of course.

During the day, Trevor VK4ZTV, tested all two metre gear with a digital frequency counter and a prize was given to the owner whose rig was calibrated nearest to 146.500MHz. An undisclosed variety of readings were gained.

An enthusiastic audience awaiting their opportunity to buy at the auction.

On Saturday night, an auction of excess radio equipment was held, with Rob VK4TKA acting as a popular auctioneer. Black and white television were sold for $3, computers $13.50, packets of...
assorted crystals $3, and radio bits and pieces were sold from $1 to $25. Everybody took something home and the proceeds were divided between the Central Queensland WIA, and the Mackay Amateur Radio Club.

Thanks to all who attended to make this event such a success.

It is envisaged to hold 'Clairview 86' later this year, and anyone interested is welcome to attend, a good time is assured. It would be lovely to see some interstate visitors this year, so time your visit to Queensland to coincide with the Convention. Contributed by Nick Quigley VK4NFL

Some weird and wonderful devices were used to detect the fox!

LEFT: The Intrepid Fox-Hunters — from left: Ted VK4QI, Roger VK4MKY, Robb VK4TKA, Ron VK4EN, John VK4JMA (and canine friend), Jack VK4VAS, Brian VK4QB, Alma VK4VAR, Phil VK4TPK, Max VK4BMW, Lloyd VK4ALW, and Lyle VK4ALD.

Seated: Ken VK4JPE and Wally VK4AIV.
The 'L-shaped Hand-Held Antenna'.

WAGGA CONVENTION

The weekend of 26-27th October 1985 was the chosen weekend to hold the much awaited Wagga Convention, with the host for the weekend being the Wagga Amateur Radio Club.

It was decided to avoid the traditional New South Wales Holiday Weekend at the beginning of the month and opt for the 26th and 27th instead. This proved to be a wise move, as it did encourage family groups to make the visit without the traffic hassles and other commitments associated with holiday weekends.

Between 150 and 200 visitors were treated to activities involving a full weekend which really started on the Friday night and went well into the Sunday afternoon. This then gave visitors a chance to get home at a reasonable hour.

The organisers were indeed fortunate to be blessed with almost perfect weather, which followed a week, or more of cold stormy conditions.

Visitors began arriving in Wagga on the Thursday and Friday and by the official start of registrations on Saturday, the Convention site, at Camp Kurrajong, was a height of visitor activity.

Stan VK3BSR, from Ball Electronics, with Jack VK2AY.

There was good support from the major amateur trade suppliers and visitors were able to observe some very interesting demonstrations, including amateur fast scan television, demonstrated by Peter VK2DOL and Graham VK2HI, and a slow scan demonstration by Stan VK3TE. A very interesting demonstration was the various facets of amateur astronomy and a model of the AUSSAT satellite was included.

Some RTTY, working vintage engine display by Alan VK2KAW.

As with most conventions, contests are the backbone of any such event. As well as the normal run of two metre and HF events which were organised by the Wagga Club, there was the added attraction of the finals of the National Two Metre Foxhunting Championship, which was run concurrently.

At the lunchtime break, visitors were treated to a top quality barbecue on both days. The Official Convention Dinner was held at the Riverina Australian Football Club and again there was a capacity attendance on Saturday night.

Speeches were kept to a minimum to enable a maximum of socialising and after the main meal, a trivia night concluded the evening.

Peter VK2DOL erecting the ATV antenna at the Convention site.

Following the immense success of the Convention, it was decided by the Club, to hold it again at the same place, same time this year, so if you are looking for a weekend in the south west, start planning now to keep that weekend in October free for Wagga '86.

Prize winners for the weekend were —

2m hidden transmitter hunts on Saturday were won by Jeff Pages VK2BYY, Roy Stockman VK1KRS, and E Templeton VK3BMV.

The 2m hunts on Sunday were won by Geoff Hudson VK3CGH, Hank De Jong VK3BLI, Peter Clemson.

David Thompson VK2BDT was first in the All Band Scramble with John Lacey VK2YEZ second.

The Ladies Throw was won by Frances Nugent and Louise Wheaton.

The winning QSL Card.
The person who travelled the greatest distance was Bill Sebbens VK4XZ and the Best QSL Card belonged to Jeff Lange VK2EJJ.

Overall winners for the weekend were — Champion: Jeff Pages VK2BYY; Second: E Card belonged to Jeff Lange VK2EJJ.

The person who travelled the greatest distance was Bill Sebbens VK4XZ and the Best OSL frequencies immediately after the RTTY News ATV channel 34 at 1000UTC.

For 1906 on 27th January. Frequencies are 3.630, 7.045, 147.680 and Vision Repeater VK4RTV UHF-ATV channel 34 at 1000UTC.

Phone call-backs are conducted on the above frequencies immediately after the RTTY News Broadcast concludes.

8th March ... Halley's Comet with Amateur radio Communications.

26th May — 1st June ... Friendship Exchanges between South Australia and Texas Twin Town, DC, via Amateur Radio.

Queen's Birthday Weekend — June ... SERG Convention with J150 input.

Labour Day Weekend — October ... LEPARC Hamfest, a weekend of Amateur Radio.

December ... SA Amateurs to Promote the Second Grand Prix.

Amateurs who would like to participate in these events, please volunteer your services to the WIA Jubilee 150 Co-ordinator, Graham Horlin-Smith VK5AQZ, Box 1234, Adelaide, SA. 5001. Further information may also be obtained from Graham or the SA Division of the WIA.

WESTLAKES CONFERENCE

The 13th Conference of Clubs was held at the Westlakes Club on 8th December 1985, and, by fortuitous circumstances, 13 clubs were in attendance.

The representation put to rest the fears that a quorum would not be obtained and, as a result, the business paper and additional general business was all dealt with before the closing time.

The Conference was ably chaired by Eddie Jayne.

NSW Divisional President, Peter VK2PJ, presents John VK2FDB, of Fishers Ghost ARC the Award for the biggest percentage increase in WIA membership for the past six months.

Much was accomplished at the Conference and it gave the ordinary member an opportunity to exercise his democratic rights.

Thanks to Beryl VK2DVL and Doug VK2AVO for providing morning tea.

From material supplied by Keith Howard VK2AKX.

ATTENDIES AT THE 13TH CONFERENCE OF CLUBS.
VK2 Mini-Bulletin

For forthcoming activities listen to the VK2WI Sunday Broadcasts for further details.

FIELD DAY

The Central Coast Amateur Radio Club will hold their Annual Field Day at the Gosford Showgrounds on Sunday, 23rd February 1986. There is plenty of off-street parking and several large covered areas for displays and exhibits. The event is not affected by weather conditions. Newcastle and Sydney trains are met. It is an ideal outing to see old friends and to browse through the latest radio equipment. Details are available from VK2WZ.

CONFERENCE OF CLUBS

The next Conference of Clubs will be hosted by the Orange Amateur Radio Club and will be held in Sydney over the weekend of 19-20th April. The meeting will deal with both its own agenda items as well as consider the Federal Convention items. The Agenda closes in late February.

SEMINAR

The next VK2 Seminar will be held on Saturday, 8th March, at Amateur Radio House. This will also be the end of the Divisions celebration of the 75th Anniversary year and the closing off of the Time Capsule. If you would like to include your QSL card or similar, bring it along, or post it to the Divisional Office. The Time Capsule is to be opened on the 100th Anniversary of the Institute in 2030.

ANNUAL GENERAL MEETING

On Saturday, 5th April 1986, the Annual General Meeting of the Division will be held. A separate posting of the notice of the meeting, agenda, and annual report will be sent to members in March. The AGM also means a new Council year and nominations are called to fill positions on the Council. Nomination forms are available from the Office. Agenda items and nominations are to reach the Divisional Office during early March.

SUBSCRIPTIONS DUE

Most members will have received their renewal notice during December. If you still have to attend to this matter please do so now to enable the continuity of Amateur radio magazine and your membership will be a matter of an inserted computer in the Federal Office has enabled the phasing-in of cyclic billing to those members who joined during 1985. Any member who joined during 1985 will receive their renewal a couple of months before the anniversary of joining. All other members who were members prior to 1985 are calculated as having joined on the 1st January. Your renewal date is included in the AR address label. For several years the Division has been able to maintain subscriptions at the present level. This is possible by maintaining (and increasing) a high level of membership.

FEDERAL COUNCILLOR

For some years, our Federal Councillor has been Steve Pail VK2PS. Steve has retired from this position as of the end of 1985. His place has been filled by Jeff Pages VK2BY from 1st January. Alternate Federal Councillors are still Tim Mills VK2ZTM and Wally Watkins VK2DEW.

CALL BOOKS

A reminder that the current Call Book is available for $6.00 from the Divisional Office during office hours — Monday — Friday 11am — 2pm and Wednesday evening at 7pm. If you require a copy to be posted add $2.00 for postage and packaging. The Call Book is also available on Bankcard. Telephone (02) 689 2417 during the above times.

Club members check with your club, as several clubs are carry stocks of the Call Book.

NEW BEACON

This beacon should now be operational with the call sign, VK3RCW. This beacon is situated in the Waverley area of Melbourne and generates CW practice at both five and 10 WPM continuously for 24 hours-a-day. The code is in groups of five mixed alphabet and number characters which are computer generated. Those who wish to upgrade, or just to keep up your speed, listen on 144.950MHz FM.

CHECKS AVAILABLE

The Department of Communications has made available to VK3 amateurs a frequency and deviation check for two metre transmitters.

By contacting the DOC monitoring station at South Melbourne, and making the appropriate arrangements, you can have these checks done. Thank you DOC for making this service available.

QSL BUREAU

The Inwards QSL Bureau is getting a large backlog of cards awaiting collection. The reasons for non-collection of your QSL cards are many and various. Some of these reasons would appear to be a lapse of postal credit, change of address, or maybe just dis-interest.

Please assist the Bureau by either getting your address correctly notified and listed, ensuring you have sufficient postage credit so that your cards can be mailed to you, or if you are not interested in QSLing, then tell the other station you do not wish to QSL.

UHF TELEVISION

It was announced in late December, that the Wollongong region is to change to a UHF-only television service within three years. The existing channel 4 commercial will be phased out to enable the channel in the area to revert to FM broadcasting. Channel 5A (Wollongong would also disappear. All existing and future services will then be only on UHF. The area already has UHF SBS.

BEACONS AND REPEATERS

The Division recently added 23cm to its beacon network at Dural, under the call sign VK2RSY — 1296.420MHz. A QSL card will be exchanged for all reports received. The beacon network will be expanded into the microwave region. The next planned frequency is on 10GHz.

VK2RCW, HADARC’s Auto Morse Machine, is in the process of changing its two metre frequency to 144.950MHz; one of the channels in the band plan for this type of service. By the way, have you been making much use of the 80 metre outlet on 3.699MHz? Reports and comments are welcomed by HADARC at PO Box 382, Hornsby, NSW 2077.

An application for a Packet repeater has been received from Colfs Harbour ARC. It is to be sited with their existing RCH 6650 service. Advice is required regarding the installation of the new service and what frequency channel to use. If you are interested in Packet service, please contact Tim or VK2JJ.

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WIA VICTORIAN DIVISION

412 Brunswick Street, Fitzroy, Vic. 3065

Whilst on the subject of QSL cards, it is essential to ensure your cards are of the correct size and are computer generated. Those who wish to upgrade, or just to keep up your speed, listen on 144.950MHz FM.

WARM WELCOME EXTENDED

The VK3 Division of the WIA would like to extend a warm welcome to the following new members.

Ian Antp VK3CH; William Beyer VK3BH; John Cameron; Gordon Cornell; William Costello VK3DWC; Graeme Davidson VK3QQQ; Richard Dubek VK3DOO; Noel Funge VE4ACF; Geoffrey Garde VK3CGT; Peter Haines ZL4DL; Dennis Heath G3YSV; Keith Levens VK3PKL; Stuart McKenzie; Geoffrey O’Hoy VK3NGO; D Olley VK3DWO; O’Farke VK2XS; Geoffrey Rice VK3VRU; Mrs J Rice VK3KVU; Doug Rolle VK3XKG and Elizabeth Mclachlan.

Contributed by Bill Wilson VK3DXE

LIMITED COPIES OF THE 1985-86 WIA CALL BOOK ARE NOW AVAILABLE FROM DIVISIONAL OFFICES

Price: $6.50 + P&P

AR85
This month's notes centre around photographs taken by Bud Pounsett VK4QY, during the Commemoration of the first television transmissions in Queensland.

The South East Queensland Amateur Television Group honoured the memory of television pioneer, Tom Elliot, who in 1935, transmitted television pictures from Brisbane's Tower Mill to Ipswich.

Amateurs and friends gathered at the site on the morning of 6th October 1985, and after a brief ceremony, proceeded to the historical Society Building in William Street. There they viewed the original equipment used by Tom.

AR

Tom VK4ABA, ably compered the proceedings, watched by cameras from all Brisbane channels, who recorded the event.

Above: Mr Campbell, a colleague of Tom Elliot, recalled the man and his work for an appreciative audience.

Did you know?
On 19th February 1878, Thomas Edison patented the phonograph.
The final meeting of the year has come and gone, and as usual the December meeting took the form of a Christmas Party. This was held, as it was the previous year, in the restaurant area of the Woden Westralian Centre.

Following complaints from country groups that holding the party on a Tuesday evening — the normal meeting night, made it impossible for country members to attend, we broke with tradition and held the party on a Saturday. We booked for 120 people, which has been the average attendance over the last five years and sold tickets at the cost price of $10 per person.

It soon became evident that Saturday was not a very convenient night for some due to other parties, previous engagements, and, in some cases, baby-sitting chores. Arrangements were made with Westral to reduce the booking to 100 and although ticket sales were slow, it was hoped to make up the numbers at the door. This never happened, and the total attendance was 76, including two members from the outer metropolitan area and just one from a country group.

WHAT IS THE ANSWER?

This means that, for the first time, the Christmas party was run at a loss. Oh well, have we learned which solution is? On request, we held the party on a Saturday to enable country members to attend and as shown, we do not get any support. It is certainly something for the 1986 Council to think about.

The party itself was excellent with the catering being first class. Guests of Honour were the State Manager of the Licensing Department of the Department of Communications, Mr Barry Field and Mrs Field, and the Western Australian Manager of Dick Smith Electronics and his guest.

PRESENTATIONS

During the evening, several presentations were made commending the winners of the WA 80 metre SSB and CW Contests. Following this the annual presentation of the Amateur of the Year Award and Certificates of Merit were made. The holders for 1985 are:

Fred Hull VK6FH, for his work over the years in promoting RTTY, digital techniques, packet radio, and helping many people in all aspects of the hobby.

Midland Amateur Radio Society, which was formed in 1975.

South West Amateur Radio Group, which was formed in 1975.

Peel Amateur Radio Group.

Perth Radio League.

Dave Wallace VK6W, council in 75th year.

Bugs, when they were made, where they were put up a couple of beacons very soon.

Medallions had already been presented to Neil Portfield VK5NE and Bruce Hedland-Thomas VK6OO, by the Federal Body as being Federal Councillors.

In allocating certificates or medallions, the Council is presented with an unenviable task. There are so many who give their time in contests, news relays, scouting, instruction, and so many other aspects of the hobby that the list would and should be endless. Ours and all members thanks are freely given and may you all get out the hobby as much enjoyment as you give.

Finally, a big thank you to Christine VK6ZLZ, long suffering wife of VK6LZ, who put in 99 percent of the work and organisation of the Christmas Party — we support you Christina.

1986 ANNUAL GENERAL MEETING

The 1986 Annual General Meeting of the VK1 Division will be held at 8pm on Monday, 24th February, In the Griffin Centre, Civic. There is still time if you wish to nominate for a position on the Committee in the coming year. Alan Hawes, the Public Officer, if you believe you could serve the Division in this way.

At the AGM, there will also be discussion on some or other technical changes to the VK1 Division Constitution, to take account of Cyclic Billing. Whether an amendment motion will be put is not known at this time, so keep listening to the Sunday evening Broadcasts for up-to-date information.

FOX HUNTING — VK1 STYLE

On the morning of Sunday, 24th November 1985, the gentle peace of a Canberra weekend was shattered as hordes of wild amateurs met to track the elusive VK1 Fox. Dennis VK1DG, was the Fox, with seven teams of amateurs souring Canberra suburbia for glory, honour, and a little black box. Ten players, were Roy VK1KRS and Richard VK1KAB. They were closely followed by Peter VK1DS and Tom VK1BUD.

I had an opportunity, thanks to Dennis VK1DG and Dick VK1ZAH. The last word on the subject must go however to Oscar Wilde — “One knows so well the popular idea of health. The English country gentleman galloping after a fox — the French, drinking with the utmost of the uneatable”.

FIELD DAY CONFEST

The Division’s John Moyle Contest Station will be located at Bulls Head, in the Brindabella Ranges. If you would like to participate, contact Alan VK1KAL, or any of the Committee.

OUTSTANDING SERVICE TO AMATEUR RADIO CERTIFICATES

Don Reimann VK6DY, for many years service to WICEN.

Wendy Clegg, VK6LZU, for work on repeaters and other techniques to improve the news service.

1985, being the 75th Anniversary of the WIA, the Division was allocated 24 medallions for presentation to commemorate the year. These were made as follows:

North West Radio Society, Amateur Radio Instructors — accepted by Dave Couch VK6WT, on behalf of these involved.

WICEN.

Geraldton Amateur Radio Group.

Goldfields Amateur Radio Group.

Southern Electronics Group.

VHF Group.

Repeater Group.

Wireless Hill Museum.

ARRC.

Old Timers Group.

YL Luncheon Group.

Northern Corridors Group, which formed in 75th year.

Midland Amateur Radio Society, which was formed in 75th year.

South West Amateur Radio Group, which was formed in 75th year.

Peel Amateur Radio Group.

Perth Radio League.

Dave Wallace VK6W, council in 75th year.

Cliff Bastin VK6LZ, council in 75th year.

Cyril Rice VK6MY, council in 75th year.

Alyn Maschette VK6KNW, council in 75th year.

Bill Heaver VK6LY, council in 75th year.

Douglas Gordon VK62MG, council in 75th year.

Medallions had already been presented to Neil Portfield VK5NE and Bruce Hedland-Thomas VK6OO, by the Federal Body as being Federal Councillors.

In allocating certificates or medallions, the Council is presented with an unenviable task. There are so many who give their time in contests, news relays, scouting, instruction, and so many other aspects of the hobby that the list would and should be endless. Ours and all members thanks are freely given and may you all get out the hobby as much enjoyment as you give.

Finally, a big thank you to Christine VK6ZLZ, long suffering wife of VK6LZ, who put in 99 percent of the work and organisation of the Christmas Party — we support you Christina.

I enjoyed myself on the Saturday night on Amateur Television, my first on-air experience, and once I had got over the initial self-consciousness for the repeater. Thank you to those involved.

My thanks must also go to those who assisted with the WIA display. Peter Koen, Lindsay VK5GZ, Jack VK5SFV, Bert VK5AOL, Cyril VK5KEM, Ron VK5AAC, Max VK5NMX, Steve VK5AIM, and anyone else that I may have forgotten.

PROBLEMS WITH CHRISTMAS

Although I have been told by a few people how much they enjoyed our Christmas meeting this year, there were a few grumbles. The hall, and in particular the kitchen, left a lot to be desired. This was partly my fault as I had not checked it out, believing that it would naturally be of a similar standard to the one next door. My apologies if they wondered if they would ever get rid of me. Thanks fellas, it was great.

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WANTEDKNOWN — CAN YOU HELP?

The where-abouts of the family of the late Leo G Cohen, Telegrapher and maker of the Simplex Auto Bug. I am researching the history of these bugs, when they were made, where they were made, and whether any manuals are available. Any information, no matter how minor would be appreciated. Contact Maurice VK3CWB. Phone (050) 22 2120 reverse charges, or write PO Box 224, Mildura, Vic. 3500. Old Times, you’re needed!!

DIARY DATES

Tuesday, 25th February 1986 — General Meeting.

COMMERCIALISM
When I read of the proposed operation of VK9LC in December's AMATEUR RADIO, page 42, I felt that there must be some mistake — such blatant abuse was unbelievable.

Subsequently, I found out that there was no mistake — received a note asking for payment for the QSL card.

Cards obtained under such circumstances should be worthless for any award. No award and no QSL. The old-time cozy. I think you may have an amateur, but not a ham.

The WAS and WAVKCA (VHF) Awards represent significant achievements, they must not sink into the mire.

73,
Gill Sones VK3AJU,
30 Moore Street,
Box Hill South, Vic. 3128.

AMATEUR LANGUAGE
Referring to Jim Linton's letter in December's AR, entitled 'Help Save the Amateur Radio Language'.

"Amateur Radio Language" is the language of people having fun, and intending to be members of another community of amateurs and when there is a migration between the two communities each language will adopt parts of the other, e.g. "stop the rot" is to actively oppose bad operating and the use of esoteric language. A good RT operator is a joy to listen to and the distinguishing characteristic of the almost exclusive use of plain language. A good RT operator would not use telegraph abbreviations and codes, and would know the correct meaning of QRT and QRM. That is why the telegraph operator would not use QRX or QRT as a request to 'wait' or 'standby'. (See the AOAH, paras 8.7 to 8.9).

Lindsay Lawless VK3ANJ,
Box 112,
Lakes Entrance, Vic. 3909.

NET HF FREQUENCY FOR VHF LIASON
In reference to November 1985 AR and in reply top Charlie Gnaecarini VK3BRZ, regarding an HF calling frequency, I basically agree with the statements made but I wish to let the membership know that 14.103MHz and 7055MHz +/- QRM have been used for VHF/HF liason for some time now. However, combined licences for limited LF and HF operators need to liaise also so may I suggest 3.580MHz +/- QRM as a crystal for this frequency is cheaply available from VK2DIK.

With this frequency and AM or LSB nobody will be excluded and a simple home-brew transmitter will do the job.

I hope this will be of assistance to the readership. The net is on Saturdays, 0330UTC on the 14 and 7MHz frequencies.

Yours sincerely,
Micha Lohse VK4JHM,
PO Box 848,
Atherton, Qld. 4883.

THANKS TO THE PRESIDENT
The 75th Anniversary Celebration of the Wireless Institute of Australia was a grand affair, and I am proud to have played a small part in your Institute of Australia was a grand affair, and I am proud to have played a small part in your

In the interest of making sure there is amateur radio around for the celebration of the WIA 100th anniversary, it is time to start encouraging the younger people to take an interest in the hobby. Those of us who are young now will not be sufficiently strong to keep the WIA alive in the years to come, and when we are gone, who is going to advertise it? I doubt there will ever be a stage in amateur radio when there are no young folk left, but I would like to see more of this present time, to ensure the continued growth of the hobby.

If my services can be put to use for any promotional, or other activity, I would be more than willing to 'chip in' and help, (provided it does not interfere with my studies), and I look forward to celebrating 25 years of being a licensed amateur when the WIA celebrates the grand 100th anniversary, and starts planning for the second 100.

Cheers, from a radio-less amateur,
Conrad Canterford VK3PHW,
28 Pyke Street,
Tatura, Vic. 3616.

ANY OPINION EXPRESSED UNDER THIS HEADING IS THE INDIVIDUAL OPINION OF THE WRITER AND DOES NOT NECESSARILY CONFORM TO THAT OF THE PUBLISHER.

OVER TO YOU!
Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily conform to that of the publisher.

So, I was lucky. But what about the others who are not fortunate enough to have been introduced to SWLing? I still do not possess any amateur radio gear. I keep my interest in the hobby alive by SWLing on the shortwave bands using a four band radio and cassette recorder.

I think we need to promote the hobby to the younger generation and as Lindsay says — the best way to do that is through the young people. When I get the opportunity, I advertise the hobby, but more is required. Maybe something which can capitalise the habits of todays young.

We don't need a revised tradition, as suggested in the CO editorial (reproduced in November) but we do need a unicorn but the tradition is fine. What we really need is a new image, a modern image — an image that does away with the idea that amateur radio is a restricted, exclusive club for old folks.

In the interest of making sure there is amateur radio around for the celebration of the WIA 100th anniversary, it is time to start encouraging the younger people to take an interest in the hobby. Those of us who are young now will not be sufficiently strong to keep the WIA alive in the years to come.

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Cheers, from a radio-less amateur,
Conrad Canterford VK3PHW,
28 Pyke Street,
Tatura, Vic. 3616.

THE YOUNGER SET
I am one of the one percent of radio amateurs — those under the age of 20. I am at a school where there are no other people interested in amateur radio. However, there are many people interested in electronics (which is taught in the physics course), and many interested in computers. Amateur radio, as it appears, is not appealing to them, but data communication, mailbox, and program exchange is of interest.

I was very interested to read the Discussion Paper: Amateur Radio — Future Direction. I confirmed my thoughts on the points you raised in all respects. I fully support the recommended enhanced novice, intermediate and telephony classes.

I believe that this suggested system would encourage many young people to gain a licence. By careful allocation of frequencies, now unoccupied bands could be revitalised. One organisation has taken the initiative to supply easy-to-build kits for amateurs. These projects and similar are excellent starting projects and provide a clear direction. The recommended licenses have the possibility to do good things for our great hobby.

Sincerely,
Jonathan Marshall VK3PRN,
30 Somers Avenue,
Malvern, Vic. 3144.

COMPUTER INTERFERENCE
Is there any possibility of an article by an expert on RFI in relation to computers and amateur radio? I refer to interference generated by the
computer and seek practical means of overcoming this problem written in fairly simple language for old timers to understand.

There does not seem to be much available on this subject.

73,

Tom Thorpe VK2GT, Kepnock, Oxley Drive, Mittagong, NSW. 2575.

This has been a serious problem in other countries and it has been tackled in the USA by much more stringent FCC rules as to the allowable radiation levels which manufacturers must satisfy. We would welcome articles on how to improve computers which predate these rules, if it is economically possible.

Ed.

APPRECIATION

I would like to register my appreciation for the assistance given to me by Phil Birchdolt whilst doing the Novice Course 1984-85, which resulted in my obtaining my novice license and the call sign VK3VJB.

Following this, I continued with the AOCP course instruction by Fred Swainston in 1985 and obtained my full call VK3CJ at the February examination. I finished the course in May and thoroughly enjoyed the experience. The revision weekends provided were excellent and I feel really lifted me to face the exams with confidence.

Since then, I have really enjoyed amateur radio and have found some wonderful friendships to make my retirement so much more enjoyable. I was an operator during WWII and have found many such fellows also enjoying this experience and, like myself, still hooked on it.

I look forward to many years of being on air just as I look forward to the beginning of each month and my copy of AR arriving.

With sincere appreciation of the work of Phil and Fred put into stirring my 'grey-matter' to many such fellows also enjoying this experience, I have really enjoyed the experience. The revision examinations. I finished the course in May and thoroughly enjoyed the experience. The revision weekends provided were excellent and I feel really lifted me to face the exams with confidence.

73.

Jack Barrett VK3CJ, 9 Charles Street, Ascot Vale, Vic. 3032.

TECHNICALLY SPEAKING — PEAK ENVELOPE POWER

Help! It seems to me, and to a number of fellow amateurs who have discussed this subject, that there is an urgent need to clarify seemingly opposing views as to the method of arriving at this important measure.

The ARRL 1985 Handbook says, In reference to a non-specific composite waveform, see page 2-23, that to compute PER "multiply the PEV by .707 to obtain the RMS value, square the result and divide by the load resistance", that is:

\[
\text{PER} = \frac{(\text{PEV}) \times .707}{R} = \frac{\text{ERMS}^2}{R} - 1.
\]

but we know that

\[
\text{ERMS}^2 = \text{mean or average power},
\]

so this reference says that PER = mean power.

On the other hand, the same Handbook says, in the context of a two-tone signal, see page 18-14, that:

\[
\text{PER} = 2 \times \text{IRMS}^2 \times R = 2 \times \text{mean power} - 2.
\]

The Amateur Operators Handbook by the then Postal and Telecommunication Department, agrees with this, see paragraph 5-43, page 19, where it states:

Mean Power = IRMS^2 R or ERMS^2 R

and that PER = 2 x mean power — 2.

As if that isn't enough, Mr N Cooper VK4ZNC, says in the context of a two-tone signal test, see AR for December 1977, page 39:

\[
\text{PER} = \text{two tone RMS power} \times \left(\frac{x}{\sqrt{2}}\right)^2 = 2.467 \times \text{two tone RMS power} - 3.
\]

(Note: There is strictly speaking, no such thing as "RMS" power. The correct name for power obtained from the product of RMS voltage and current, and variants involving R or Z, is "mean" or "average" power — see Alternating Currents, by A E Clayton, and ARRL 1985 Handbook, page 2-23).

The confusion caused, to me at least, by these apparently divergent views, is not clarified by various statements and definitions in the literature, all more or less supporting relationship — 1. above, viz:

From "Single Sideband for the Radio Amateur", ARRL, 5th Edition:

(a) "Peak Envelope Power is the instantaneous power at the peak of the modulation cycle" page 251.

(b) "Instantaneous or peak RF power is 2 times PEP" page 217.

(c) "Peak Envelope Power is the average power (ie not instantaneous or peak power at all) of the highest amplitude signal measured over one RF cycle" page 217.

(d) From the ARRL 1985 Handbook, page 2-23: "The definition, peak power = peak volts x peak current = 2 x average power conflicts with the meaning of the term when used in radio work, and peak power output of a transmitter is the power over the RF cycle having the greatest amplitude and (PEV)^2/R."

(e) By David P Smythe, CQ February 1969 as reprinted in AR for August 1969, page 15: "Peak Envelope Power is not simply peak voltage squared divided by the impedance as many amateurs believe."

These apparent inconsistencies came to light when preparing to calibrate a meter to read PEP, when it appeared that, depending on which approach was adopted a difference of 2 times (even 2.467 times) could result.

However, I suspect that all of these versions could probably be seen to be consistent if only the respective conditions were clearly understood, or at least specified, but they seldom seem to be. It seems to me that a minimum requirement is an easily understood, unambiguous, agreed definition of what is meant by Peak Envelope Power.

Would it be possible to have an authoritative article published in AR, bringing all these differences together, and defining in clear and unambiguous terms, with accompanying diagrammatic and mathematical support, Peak Envelope Power, and detailing how the radio amateur can measure it?

As a separate, but related issue, there must be many linear amplifiers in use by the VK amateur fraternity, designed to deliver power outputs well in excess of the legal limit in this country.

There appears to be a lack of information on how to properly adjust and operate these monsters, so as not to exceed that limit, and it is suggested that this also, would be a suitable subject for an article by an appropriately qualified member of our amateur fraternity.

I am sorry to be posing a series of questions, but I feel answers are long overdue.

Yours faithfully,

Ken Andrews VK2ATK, 32 Aeolus Avenue, Ryde, NSW. 2112.

Ron Cook VK3AFW, attempted to resolve the problem in Novice Notes for June 1981, entitled "Peak Envelope Power — What is it?" Some corrections were published in November 1981. They left the basic conclusions unaltered. PER and mean power are the same for unmodulated CW. For two-tone and more complex modulation mean power is less than PER. The VK3AFW article answers most of the above questions.

On, or about 21st February 1858, the first electric burglar alarm was installed in Boston, USA.

Ken Andrews VK2ATK

February 1986-Page 61
Silent Keys

It is with deep regret we record the passing of—

MR G S 'ANDY' ANDERSON VK2KGA
MR R H BAINES L30009
MR HUGH CLAYTON VK4AHC
Hugh passed away at his home in Melbourne, Victoria, on 12th December 1985.

MR D P DAVENPORT VK3AWA
4TH OCTOBER 1985

MR HARRY ELLISON VK3DRO
19TH DECEMBER 1985

MR WILLIAM LINDSAY GRIIMSHAW VK2EGW
23RD FEBRUARY 1985

MR R H BAINES L30009
29TH JUNE 1985

MR A V MACEY VK3BYB
1ST NOVEMBER 1985

MR P A MCArTHUR VK2DCS
27TH JULY 1985

MR H W MCKAY L300034
21ST JUNE 1985

MR T J MEAD VK2EJM
13TH JULY 1985

MR A E 'ROBBIE' ROBERTSON VK2US
9TH SEPTEMBER 1985

MR J P ROSEWAARD VK5MN
27TH JULY 1985

MR E M SIMPSON VK2ES
21ST JUNE 1985

MR E V SPAILE VK2YS
13TH JULY 1985

MR KEVIN JOHN WATSON VK2BLW
29TH NOVEMBER 1985

MR H A WHITE VK3AGK
1IST NOVEMBER 1985

Kevin John Watson VK2BLW, was one such man. His sudden death on 29th November 1985, closed a chapter in the amateur radio history of the Hunter Valley, for which all can be justly proud.

But, this well-balanced man had other hobbies as well. One that he pursued with great enthusiasm was film making and amateur cinema. His house contained a well-equipped cinema and he had a special ability to be able to make his own and others pictures live again on the screen by the use of his rare skills. Those who saw his shows, agreed that here was amateur cinema at its best.

Kevin's life could best be described as one of service and achievement — he was always ready to help out in time of need. This he did in his war service, but it was heightened in many ways by the natural disasters which beset the Maitland District.

When the fertile Maitland valley floods, much of the city is inundated. In the days before good communications were available, these were disasters beyond belief. The flood of 1955 was probably the greatest the city has experienced and for seven days all road, rail, and most telephone lines were severed. A disaster communications centre was set up at a high point in the CBC bank. Kevin was the message operator and for seven days and nights he remained at his post.

Kevin married Margaret Holmes in 1948, a union which produced two sons, Gary and Allan. An only daughter, Margaret, was lost in a tragic accident on her way to Scotch College.

Kevin's life was one of service and achievement — he was always ready to help out in time of need. This he did in his war service, but it was heightened in many ways by the natural disasters which beset the Maitland District.

During the war years, Robbie became a ground radio maintenance engineer with QANTAS. He also flew as a radio operator on Qantas (Flying Boats, Lancastrians, etc) in those years. As QANTAS began to plan for new equipment, Robbie was appointed Radio Projects Engineer. He became responsible for the selection and Introduction into service of many types of electrical equipment for Super Constellation, B-707 and B-747 aircraft. These responsibilities involved trips to USA and Great Britain for courses and conferences.

Among the many interesting developments were tests carried out in 1967 using Boeing 707 aircraft, in which satellite signals were used to relay signals from aircraft on the Trans-Pacific route. During the satellite program, VHF contact was made from the aircraft sitting on the tarmac at Mascot, near Sydney Airport, via satellite. The satellite was 8 degrees above the horizon at Mascot at the time.

At 61 years of age, Robbie retired from Qantas, and went back to radio. His aim was to get his Marine Operators Certificates revalidated, then returned to coastal shipping, until he retired again in 1972. Robbie died on 9th September 1985 at the age of 77.

THOUGHT FOR THE MONTH

When you argue with a fool — two fools are arguing.
Bill was going through the pretence that his pencil wouldn’t write properly. He waited and then sent again. Once more Bill got nothing.

“You have a go”, said Fred. Bill brightened up immediately and switched on the oscillator. He started hammering away at the key and produced a symphony of wailing reminiscent of air raid sirens, accompanied by a rhythmical sound like castanets. Then suddenly he stopped.

“You get it?” he asked. Fred replied, “You must be joking”. Bill remarked, holding up one of the cans. “I’ve got it,” Fred replied. “You get it?” Fred exclaimed. “Sounds like a cat’s home in the throes of being machine-gunned. You’ll have to do something about that oscillator.”

“Built it myself”, Bill said. “It works”, Fred said. “There’s a bit of play on the key”.

“Bit of play?” Fred exclaimed. “You could crack nuts with it! Where did you get the squeaker?”

“Built it myself”, Fred said nothing. He had seen some of Bill’s efforts before. At first this one couldn’t do anybody any harm. Fred gave his key a couple of taps and looked at Bill.

ADDENDUM

The winding details of the toroids were omitted from Figure 1 in the article “75 ohm High Pass Filter” which was published in January’s AR.

Ted Holmes VK3DEH
20 Edmunds Street, Parkdale, Vic. 3195

“Ready?” he enquired. Bill nodded, whereupon Fred began to tap out Morse at what seemed to Bill a frightening speed. Fred saw that Bill was having trouble and stopped, saying nothing. Bill was going through the pretence that his pencil wouldn’t write properly. He waited and then sent again. Once more Bill got nothing.

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“Built it exactly the way I saw it in AR”, Bill replied indignantly. Again Fred said nothing. He knew only too well that nothing Bill built ever followed the diagram. Things were changed, according to the junk available at the time.

“I’ve got a better idea”, said Bill and disappeared out of the room. Fred waited, casting his eyes around the all too familiar shack. The place looked as though it had recently been visited by Whelan the Wrecker. Bill reappeared, carrying two cans and two glasses.

“A good drop, this”, Bill remarked, holding up one of the cans, giving it a shake, then opening it and spraying Fred’s oscillator with the contents.

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<tr>
<th>TYPE</th>
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<th>400 MHz</th>
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<td>N/A</td>
<td>7.70</td>
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THE FUTURE OF AMATEUR RADIO

By now you will all have had time to digest the suggestions for the future which were put forward in the discussion paper by VK5 PC and 2ZTB and published in the February issue. Since then we have received relevant material from several other sources.

One of these is the announcement by the Canadian Radio Relay League of proposals by the Canadian DOC to restructure their amateur licensing system. Canadian amateurs have six months in which to discuss the issues and make formal comment to the Department. Essentially, a no-code entry level certificate is proposed, permitting the use of commercial transmitters (no home-brew) on VHF only, all modes. Passing a 12WPM code test would authorise HF operation as well. The highest level certificate would require advanced theory examination and grant all privileges, including home building transmitters and responsibility for repeaters etc.

Letters from our own members point out the expense involved in setting up a station with new commercial equipment, and I personally would be sorry to see a system under which people of our own Novice standard, for example, were prevented from building even a simple CW transmitter. The CRRL announcement, in its first paragraph, states the average age of VE amateurs to be about 55, with few young recruits. This all-too-familiar situation can only be aggravated by measures which make the initial cost of a station even higher than now. But on the other hand, how many of our newcomers built their own first transmitter? How many (as well as your home-brewing Editor) have built their first (or any) transmitter over the last 40 years? Seriously, we would like to know.

On a slightly different theme, a letter from Tony Tregale VK3QQ, is published in this month's Over to You. In which he objects to the January editorial arguments in favour of joining the Institute. Tony is a member of the WIA and is well-known for his years of service as Federal EMC Co-ordinator, an onerous post for which no successor has yet volunteered. Presumably he is a member for reasons other than those mentioned in the editorial, so any suggestions he can add as to why VK amateurs should join the WIA would be appreciated. We do feel that his remarks about "organisations like the WIA" promoting discrimination "to destroy the original concepts of the Amateur Radio Movement" are totally unfounded. Without such organisations his Intangible Movement would be only a number of leaderless individuals rushing off in all directions at once. Discrimination is not encouraged by our national amateur societies. Their existence and strength is the bond which prevents amateur radio from disintegrating into self-seeking anarchic. If this were the appearance of the hobby no responsible government would allow it to continue.

Bill Rice VK3ABP
Editor

THE RON WILKINSON ACHIEVEMENT AWARD

As outlined in Amateur Radio, March 1978, the WIA Award, The Ron Wilkinson Achievement Award was made possible by the generosity of Mrs Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC.

Ron Wilkinson VK3AKC, of Geelong, died on 22 March 1977. He had built up a reputation over many years for activities in the VHF/UHF bands. He was chairman of the Institute, President of the Australian DXCC; Development of state bureaus; Microwave activity; Involvement in WICEN, Education, Clubs, or similar; Outstanding communication achievement; Article for Amateur Radio Magazine; Holder of Australian DXCC; Development of state bureaus; Microwave activity; Involvement in WICEN, Education, Clubs, or similar; Achievement in using amateur Satellites; Notable public service

Mrs Wilkinson's donation to fund this Award was invested in Government Bonds so that the annual interest would meet the costs of the annual Award.

The winners of this Award are announced each year in the March issue of Amateur Radio.

DETAILS OF THE RON WILKINSON ACHIEVEMENT AWARD

NAME: The Ron Wilkinson Achievement Award
FREQUENCY OF AWARD: The Award is to be made annually during the month of March — nominal date 3rd March and relates to the previous calendar year, so as is practicable.

REASON FOR AWARD: The Award is for special achievement in any facet of amateur radio. The following examples illustrate the level of achievement which will be taken into consideration in making the Award:

Outstanding communication achievement; Article for Amateur Radio Magazine; Holder of Australian DXCC; Development of state bureaus; Microwave activity; Involvement in WICEN, Education, Clubs, or similar; Achievement in using amateur Satellites; Notable public service

As can be seen the Award is extended to cover the whole gamut of amateur radio activities.

THE AWARD: The Award is to be funded from the interest from the donation by Mrs Wilkinson, supplemented from Institute funds, if required.

The Award is made up of — a Certificate; $50 cash; Books to the value of $50 from Magpubs and WIA Subscription paid for one year.

In the event of a joint Award, then each recipient will receive — a Certificate; $25 cash; Books to the value of $25 from Magpubs.

METHOD OF SELECTION: The Award will only be available to amateurs from VK call areas. Preference will be given to WIA members; Individual amateurs may nominate or make personal application to the President of their Division by 31st October each year; The President of the Division is then to forward the most meritorious applications/nominations to the Executive by 30th November, only after satisfying himself that the applications/nominations are worthy of consideration; The Executive will nominate the recipient of the Award by 31st January, subject to Federal Council agreement if considered necessary; The Award will be announced in Amateur Radio for March. The nominal Award date is 3rd March each year — the birthday of the late Ron Wilkinson VK3AKC; In the event of no nominations forthcoming, the Executive may select a recipient.

CERTIFICATE: A condition is the Certificate will contain a list of all nominees year by year.

RECIPIENTS TO DATE

1977 Jointly by Wally Green VK6WG and Reg Galle VK5QR for a record-breaking 1296MHz contact.

1978 Jointly by Alf Chandler VK3LC for Intruder Watch co-ordination and Winston Nichols VK7EM for VHF and ATV work.

1979 Jointly by David Wardlaw VK3ADW and Michael Owen VK3KI for work concerning WARC 79.

1980 Cec Bardwell VK2IR for services to education in VK2.

1981 Ray Jones VK3RJ for services to the QSL Bureau.

1982 Dick Norman VK2BDN for VHF/UHF activities.

1983 Jointly by Peter Smith VK1DS and Ken Palliser VK3GJ for design and construction of VHF Repeaters.

1984 Lyle Patison VK2ALU for Moon-bounce Communications.

WINNER FOR 1985

The Institute had a difficult task again this year to select one winner for this Award from the very high standard of nominations received. It was eventually decided to grant the Award to Doug McArthur VK3UM for his activities involving EME and particularly the "Aircraft Enhancement Mode" of VHF Propagation. This latter has stimulated much interest and correspondence during the year since Doug's article was printed in Amateur Radio. Many amateurs are now involved in experiments using this mode of communication. From the involvement of so many amateur stations, it is hoped that a complete understanding of the mechanisms of this type of propagation can be gained and, once again, the Amateur Service can make a significant contribution to the knowledge and use of anomalous modes of propagation to the benefit of other users of the radio spectrum.

Congratulations Doug — and keep up the good work.
Several WICEN exercises in the Brisbane area, prior to 1980, showed a need for a portable repeater for WICEN use. Such a repeater would enable two metres to be used over a much larger area, and be of inestimable value in an emergency situation. At this time, the only repeater licences issued were for fixed stations, but submissions had been made to DOC to allow the licensing of portable repeaters. While this was going through the channels, work was going ahead with the assembly of the equipment in anticipation of eventual approval.

The basic idea was to use two normal transceivers interconnected through a control box, which would automatically carry out all the switching and identification functions. The main item to be designed was the control box.

Of the main functions in this box, the only modern design that appeared to be available was for the control board. This was found in the March 1979 issue of QST, in an article entitled "Using CMOS ICs". But, despite much searching, nothing could be found that would give the identification and timer functions. It was decided that a completely new board would be designed. As George McLucas VK4AMG, had recently designed and constructed a beacon circuitry generally. It was decided to re-design the board and at the same time, use an EPROM with more capacity. The final version, designed was the control box.

The Mark 1 version gave eight different fixed length identification messages, but, with a number of minor problems showing up in the circuitry generally. It was decided to re-design the board and at the same time, use an EPROM with more capacity. The final version, the subject of this article, is an identifier capable of 64 separate messages, each of a maximum of 250 bits long. The missing six bits give an optional three bits at the start of the message, and a mandatory three bits at the finish, to allow the detection of the end of the message. This would allow, for instance, eight call signs, each with eight different suffixes, indicating operational parameters. For example, VK4RWI normal ident, VK4RWI-H high SWR, VK4RWI-L low voltage, VK4RWI-D unauthorised access to repeater housing, etc. The advantage of the multiple call signs is that it allows the WICEN portable repeater to fill in as a backup to any of the repeaters around Brisbane should any of them fail. In addition, several personal call signs have been programmed to allow home testing. These have suffix TEST.

This repeater board is not restricted to repeater use but could be programmed to send short CW messages and, used in this manner, would be of value in a contest.

To give the identification and timer functions, it was decided that IC1, a 4047, is a multi-vibrator providing clock pulses for the board. The setting of this also provides a control for the speed of the ident, and, with this set to 10WPM, the interval between ident will be about four minutes, well within the DOC requirement of five minutes. IC2, a 4011, gates a and b as used an audio oscillator for the CW ident, with the square wave output filtered and shaped by the subsequent RC network. Gate c allows the clock pulses to go through to the counter when enabled by IC6a. Gate d is used as an inverter in the timing network.

IC3, the counter. Outputs Q1-Q8 are fed to IC4, the 2716 EPROM, Q0-Q12 are fed to IC5a, a 4012, which sets the time intervals. Identification between IC3 and IC5a is by means of four links. By installing one link only on Q9, IC3, the interval would be about 16 seconds. This is ideal for setting up and testing. When all links are in place the maximum time interval is available.

The output of IC5a is inverted by IC2d, which passes a clock pulse, resetting IC3 to 0 and resetting flip flops IC6a and b (4027) in preparation for the next request. IC6a in turn closes gate IC2c stopping clock pulses from reaching IC3. When the request to identify comes through the control box, it causes a change of state of both IC6a and IC6b. IC6a turns on gate IC2c to allow clock pulses into the counter through IC3. One output of IC6b is fed to the PTT line of the transmitter through a buffer transistor, and/or a DIL relay. The PTT contact on this relay can be linked either to ground or +12v, depending on the transmitter requirement. The other output of IC6b prepares the EPROM for use.

IC7/IC8 (4044) are electronic switches. Two banks of four DIL switches enable the required electronic switch which, in turn, enables selection of any one of the data lines from the EPROM. These switches could be deleted and one data line permanently selected with a link. Another DIL switch is fitted to address lines 8, 9, and 10 on IC4. This allows eight different starting locations for the EPROM. Alternatively, these lines could be addressed through a transistor interface and enabled by detector units for the various operating parameters. Another alternative would be for lines 8, 9, 10 to be taken to Q9, Q10, Q11 of IC3, giving eight different messages, each of 2k bits long, ideal for beacons, etc. The EPROM is programmed with the CW message on eight data lines. For example, the message “VK4RWI” takes up approximately 110 bits on data line D0, in the first block of messages. Each bit is equivalent to a unit in normal CW and the EPROM is programmed accordingly. For example, V would be programmed as 10101011 and J as 1011101110111.

Output of IC7c is fed to IC2a, which toggles the audio oscillator on and off. It is also fed to a transistor pump circuit, which functions as an end of message detector generating a pulse at the output of IC5b. This in turn toggles IC6b switching the PTT line off and resetting the EPROM to the standby (low power) state. The bias resistor on this transistor is critical and is selected to ensure that the tone oscillator does not ‘pop’ in the standby state. The value varies between 47k and 100k. The capacitor on the emitter determines the tail length of the ident.

IC3 continues to count until all four inputs of IC5a are taken high. The output then resets IC6a and b in readiness for the next ident request.

The finished board is 155 x 90mm and contains seven CMOS ICs. One EPROM, a 5V regulator, plus a handful of other components. Current drain in the standby state is 20mA and in operation it draws 70mA, excluding the relay and any indicator LEDs, if these are used.

PAUL RODENHUIS - VK2AHB

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The first version of this board was completed and tested by April 1981. Soon after DOC agreed to the issue of licences for portable repeaters. With the new licence and the complete control box, the VK4RWI repeater was immediately available for testing, and was put into successful operation in a WICEN exercise in early May 1981. (See RALLYING AND WICEN, July 1984 AR).

Apart from the portable WICEN repeaters several ident boards have been made and these are operational in two of the repeaters in Brisbane, two in Gympie, and at Roma, Mount Isa, and Weipa. Other repeaters proposed for Townsville and Terranora Lakes also intend to use the board.

The PCB is double sided and where connections are necessary to the top tracks at an IC. This is done indirectly by a link through the board to the appropriate leg underneath.

All resistors should be fitted first as some (about 10), are used as links from the top of the board to the bottom. In addition, there are about 50 other links through the board.

The circuit diagram and printed circuit board layout provided with this article should enable anyone to duplicate the ident board, but if there are any problems encountered, Geoff VK4AG, QTHR will be only too happy to assist.

Thanks to George McLusce VK4AMG, for the basic idea for this board and Phil Sleem VK4APA for programming the EPROM.

Did you know ... Fosters Lager became available to the public in 1889, after Mr W M Foster began brewing beer in Collingwood, Vic, in 1889.
UNDERSTANDING THE SPECTRUM ANALYZER

The March issue of ETI looks at spectrum analysers in general and the Anritsu MS610A in particular. Once the exclusive tool of rf gurus, the spectrum analyser is finding its way out of the closet and on to the bench top.

ALSO IN MARCH
ELECTRONICS TODAY

★ Looking for clearer frequencies for shortwave broadcasts
★ The 8 mm video recorder is a CD quality audio recorder
★ Philips PM3360, micros analyse waveforms
★ Starting electronics — fault finding
★ Teaching the electronic brain with microprocessor development systems
★ Results from comet Giacobini-Zinner rendezvous
REJUVENATE YOUR MOSLEY TA33

This three element tri-band Yagi antenna was one of the first commercial beams to appear on the amateur radio scene in this country, during the 1960s. Like most tribanders, it is a compromise and sometimes poses a few problems with tuning in order to obtain reasonable SWRs on each of the three bands.

If you have one, or have recently obtained an old Mosley TA33, don't despair because with the modifications outlined in this article it will operate satisfactorily.

Firstly, if the antenna is an old one, it is recommended that the trap sections be completely overhauled for the following reasons:

Due to industrial fumes, salt laden sea breezes or tropical humidity, any triband antenna's performance will fall-off, due to corrosive effects within the traps.

Open the traps by carefully removing the plastic end covers, and separating the metal coil cover and the coil.

The coil is aluminium wire on a plastic former and connected electrically to the element tubes by steel PK screws, which will probably be rusted and corroded. It will therefore be necessary to replace the screws with new ones and whilst out shopping for these procure a tube of 'Penetrox A' or 'Aluminox' from an electrical supply house.

This material is a grease used in high voltage electrical cable jointing, and should be used where two dissimilar metals are likely to cause electrolysis and corrosion.

Clean the aluminium wire ends and element tubes, where they telescope, with steel wool or fine emery cloth and apply jointing grease before re-assembly.

If the plastic trap covers crack or crumble during dissembling, replace them with a suitable tape such as duct tape or other sealing compounds, but make sure they are non-metallic.

Take care to assemble the trap cover with the drain holes facing down, and ensure they are not blocked.

When triband beams came on the market, they were facetiously referred to as 'rotary bird perches', and indeed there can be trouble if the screws holding the inner ends of the driven element halves into the insulating blocks snap or pull out under the combined weight of large birds. The straw-necked ibis, a migratory bird from Siberia, is fairly large and visits Queensland during the summer months. It delights in landing on clear branches and beam antennas, so that it has an easy take-off.

To combat this problem it is advised to investigate the fitting of stronger screws, and also fit screws into the boom, just under the adaptor block of each element to prevent pivoting of the elements around the boom.

However, the writer has found there is one species of feathered friend, namely the mudlark or peewit, that if they build their neat plaster nest on the boom without de-tuning it, it is better to leave them there! These particular species will not let any other bird, however large, onto their nest, or your beam, for that matter. They even attack hawks with the ferocity of a pair of 'spitfires' attacking a squadron of bombers!

The problem of satisfactory tuning for all bands is overcome by the use of gamma matching sections. (See photograph for gamma matching). This system is used because it enables each band to be tuned separately.

The gamma match consists of two lengths of aluminium tubing, telescoping to form a tubular condenser and insulated from each other by plastic tubing, or other material, in the form of a sleeve. (See Figure 1 and Table 1 for dimensions).

The driven element (DE) halves are joined together at the centre by a piece of copper wire and the exact centre of the DE is earthed to the base plate of an SO239 coaxial fitting, mounted on a plate attached to the DE support.

From the centre of the SO239 a copper wire is run to the end of each of the gamma match sections, which are disposed radially around one side of the driven element. Note that the 'hot' ends of the match sections are insulated from the element by perspex plates, whilst at the adjustment end, an aluminium clamp strap is fitted.

Don't be surprised when you start to tune the match sections if you find that the resonant frequency has moved up out of the top end of the band — this is corrected by fitting some pieces of 3/4" (9.5mm), TV element tubing into each end of the DE so as to lengthen it by upwards of 150mm.

Tuning can be carried out with the beam pointing upwards and resting on its reflector, or at a reasonable height, above ground.

Use a noise bridge, if one is available, or an SWR meter. Adjustment of the director and reflector must also be made and intermediate tuning screw holes can be drilled between those already provided, but measure them to be the same each side.
As a boy I had been bird-nesting, catching crawfishes, hunting in the bush scrub with my Daisy air-gun (no bee-bees) and blunt pocket knife, played football and cricket on any spare allotment, and marbles in the middle of our street. I had now reached that important stage in a boy’s life when I had to decide to write my first story. Only three pages on, and a well meaning friend introduced me to his crystal set. It was the most interesting thing I had ever seen, and while having no idea how it could be done, resolved that I would make one.

**NOTHING WORKS THE FIRST TIME**

My parents were not impressed by my ambitions, my Dad was not into such things but gave me enough money to buy, second-hand, one pair of earphones, a variable condenser, and a crystal. Mother emptied the baking powder container prematurely (the cardboard coil former), and about two fruit cases from under the house provided the timber for a cabinet. A coat of varnish to keep the dampness out, and a little work with the aid of an old soldering iron heated on the gas ring and ultimately came testing time.

Now how was I to know that nothing works the first time, I had learned something the hard way which was to be repeated so often in the years to come. The trick, of course, was to find a good spot on the crystal with the tip of the catswhisker and bingo!

**MORE MONEY FORTHCOMING WHEN IT WORKED**

It would not be easy for me to describe the reaction exhibited by my parents and myself following this amazing break-through. Sufficient to say that additional fruit shillings was forthcoming for the purchase of another set of earphones to be shared by two of the family, while the third person had a complete set.

The Great Depression was making it’s presence felt at this time and people were giving things to one another as an almost every day occurrence, which is how I came by a good cabinet with a Bakelite lid. The base was included, was a few ceramic covered resistors with lead ends, some capacitors, and three battery type valves. The circuit diagram was a bit of a mystery, but the milkman suggested “piece of cake” as all the connections were made with spacers. The Reinfart coil used some more round food package “tins” from the kitchen. Two 1.5 volt “telephone” batteries were the “A” supply, and one 45 volts “B” battery was the HT.

A potentiometer in the “A” supply to the valve filament was the volume control.

**UNTOLD JOY UNTIL ELECTRIC MANTEL RADIO ARRIVES**

This very humble beginning brought untold joy to an otherwise drab life. This was encouraging.

Soon after the beginning of my apprenticeship to the electrical trade, my parents purchased an “all electric” mantel radio. That part of the industry, a vernier dial (from disposals) with ceramic insulation where possible, a change of governor on an old hand wound turntable, was able to get up to 15WPM. I had, by now, met another amateur who lived close by and he was most helpful in providing a variation in practice, from the “groups of five” on the records. Requirement at that time was 14WPM.

The issue of the “Experimental Licence” and a call sign on 2nd June 1948, was a day to remember, as I am sure it must be to most aspirants.

By now, I had accumulated enough receiver type components, together with some disposals, junk of great value, and I was well on the way with the new transmitter.

It was to be home-built, of course, as there was no choice, and I had already decided on a single 807 in the final to be driven by a 6V6/G crystal oscillator on the 40 metre band, and modulated by a pair of 807s. The antenna, after a little “try it and see” was a half-wave end fed Zepp fed with a home-made 600 ohm line with five inch Bakelite spacers. The modulation transformer was a receiver power transformer, until I was able to wind a custom made one. For a start the microphone was a carbon insert with the traditional wooden match connection at the rear, into a speaker transformer in reverse.

My parents were not impressed by my interest in kilowatts, and screen modulation AM.

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My parents were not impressed by my interest in kilowatts, and screen modulation AM.
Late in 1950, two metres, with a pair of 7193s in a unity-coupled oscillator and a modified ex radar receiver proved a disappointing until several of the 'boys' built three over three beam antennas and we were able to work all around the suburbs. However, a change in work, and the arrival of television meant banishment from amateur radio.

OUT OF RADIO FOR A TIME

Being more settled now, receiverless, transmitterless and almost junk boxless, I decided to build a receiver to see what was happening. In the middle of this construction I encountered one of my old amateur mates who told of how things had changed and advised me to call on yet another amateur who had recently bought some gear. And so I saw my first Black Box — a convincing winner.

THE RESONANT RHOMBIC

The Rhombic antenna is the ultimate in simple wire arrays, where maximum gain is required in a given direction. Many radio amateurs have aspired to a Rhombic, only to be deterred by space considerations. To be effective, this antenna needs to be big.

My interest goes back to World War Two, during the closing phase of which I was associated with the US Signal Corps. The military manuals of the day described the Rhombic in great detail and encouraged the 'troops' to utilise this type of antenna, even though the conditions for its erection might not be ideal.

Forty years after WWII ended, Bill Owen, of the University of Pennsylvania, sent me a copy of a 1942 publication, after learning of my plans to erect a large wire array.

The requirements for a Rhombic are simple, some poles, lots of wire, and a good antenna tuner.

POLES

There may have been a time when a radio enthusiast could have 'won' a few poles from the local power company, or council, but those days are long gone, as I soon discovered. It took six months to find an honest timber-cutter who was prepared to cut down, and deliver, the necessary trees for QRP dollars. I selected some Iron Barks, which were growing on the side of Mount Buderim, not far from my QTH. For any conservationists who may be getting excited at this stage, may I say this was only the second time in Australian history that the sound of an axe had rung out in this particular forest, and culling is essential for proper growth and timber production.

When cleaned up, the poles were a little over 50 feet (15m) in length and were allowed to dry out for some weeks. They were then painted with preservative, fitted with climbing pegs and turnbuckles of robust galvanised chain and turnbuckles of robust copper wires moulded alongside. Telecom call tuners didn't worry because they did not, at any time, see worse than 1.2:1 SWR on 80, 40, 20, 15, and 10.

A COMPUTER IS SOMETHING ELSE

Now the computer is something else and I may have left it a little late. Nothing to build or probe with a meter, no mods or adjustments, but lots to learn and think about. It has certainly been invaluable in the preparation of this article which has been my first experience with the wordprocessor.

Much has been said, and will continue to be said about the many facets of amateur radio. While many have passed through to full time employment there will always be those who have no further wish than to participate at the hobby level, but for all there is ample scope.

I will say that many of my contemporaries have at some time needed the friendship and assistance of other amateurs, and for myself offer a big thank you to those who came to my aid. I am sure that the future holds much promise for amateurs who will continue to be represented in the forefront of advancement in electronics and particularly communications.
radiates and receives at the angles which normally are most effective for communication on the frequency to be used. Amateurs are usually attempting to achieve wave-angles of 0 to 20 degrees above the horizon. It is not within the scope of this article, nor am I competent to explore fully, Rhombic design. However, Figure 2, which is a wartime chart is included for interest.

![Figure 1](image1.png)

**Figure 1**

![Figure 2](image2.png)

**Figure 2 — Rhombic Antenna Design Chart**

For Maximum output design. The top curve is tilt angle, middle curve, height above ground and the bottom curve is leg length. For example: If you require a wave angle above the horizon of 18 degrees, draw a vertical line through point a (18 degrees on the wave angle abscissa). The answer would be — leg length 5.25 wave lengths, height 0.81 wave lengths, and tilt angle 72 degrees.

Usually a Rhombic is fed via 600 ohm open wire transmission line. Spacing wire of gauge 14 to 20 at five inches (127mm) will achieve a characteristic impedance within the range of 600-700 ohms. Spreaders were made of perspex obtained as scrap from a signwriting company. It is beastly material to cut into strips; I found a sharp electric saw necessary. Open wire feed line is the most efficient method of transfer of RF to an antenna, and has a velocity factor of unity. It may be necessary to alter the length of the feedline to minimise RF feedback in the wireless room. While on this subject, I found it necessary to tidy up most of the leads. Wires to extension speakers, and ALC, plus relay lines to linear amplifiers were either shortened or shielded. Remember, this antenna is capable of being operated on 160 metres through to 29MHz, and you will be lucky not to strike this trouble on at least one frequency. The antenna became operational during January 1984 and the first impressions were of incredibly quiet reception and reports from overseas amateurs indicated the station sounded better on the Rhombic. Subsequent reports show a gain of one to one and a half S points on 10 and 15 metres, and even on 20 metres, when compared with a TH6, which is no slouch on these bands. These are average observations, on many occasions the wire antenna is much better than the Yagi, in no uncertain terms. But it is in the noise-free reception that it becomes a winner.

Since the resonant Rhombic is claimed to be bi-directional, with maximum lobes in a line bisecting the apex angle, I looked forward to interesting results in the reverse direction. I duly came up on the ANZA net and was shattered to find results were terrible, with the Yagi way out in front. Baffled, bothered and bewildered, I shot off an air mail letter to W6AM explaining my tale of woe. Don Wallace ran a stable of 13 Rhombics and had kindly lent me much data, collected by him over a long lifetime. His reply was — "The books say a Rhombic is bi-directional. You and I have found otherwise. It is bi-directional only if there is a feed line on both ends. The far end is then terminated in the station, via relays. It is then capable of awesome front to back ratios, measured at 56dB here". It is sad to relate, Don became a silent key as I was putting this article together.

**TUNER**

I mentioned the need for an efficient antenna tuner. The 'Transmatch' has been around for many years, with the original circuit being published in QST. I used one until W1FB advised me of a variation on the original, called the SPC. It uses the same components but covers a much wider frequency range. It has a much better harmonic attenuation than the transmatch. In order to make it include the 29MHz FM frequencies, I found it necessary to pay more attention to layout and use copper strip, rather than wire, to connect the bits and pieces together. The balun was made from cores which are regularly advertised in Amateur Radio. These items come complete with excellent directions. The SPC circuit is featured in late issues of the ARRL Handbook.

In the 18 months that my antenna has been in operation, it has been used on all amateur frequencies. It was used on 22nd June, when the 12 metre band was opened for American amateurs, and excellent reports were received. It appears to be reasonably directive on 30 metres towards the United States, and is also used on 40 metres, in that direction, with good results.

If I could discover how to turn the farm around, I would dispense with Yagis. Since I don’t ever anticipate being able to do this, I can only express my gratitude to Professor Yagi and his friend, Mr Uda, for their compact invention. 'Project Rhombic' would never have ‘got off the ground’ without the encouragement and practical help of Roy VK4ARU, who was a tower of strength throughout the construction phase.
WHERE DO MAGIC FORMULAE COME FROM?

Bruce Devenish VK1BUB
3 Lambert Street, Lyneham, ACT. 2602

Now, if $\rho V_m$ is reflected back, the lost power is

$$P_{m} = \frac{\rho^2 V_m^2}{R}$$

\(\therefore\) Power delivered to the load:

$$P = \text{maximum possible power — reflected power}$$

$$P = \frac{V_m^2 - \rho^2 V_m^2}{R} = \frac{V_m^2 (1 - \rho^2)}{R}$$

Combining these two formulas to the form required gives definition B:

$$P_m = \frac{V_m^2}{R} \times \frac{R}{(1 - \rho^2)} = 1/1 - \rho^2$$

Now from equation A:

$$1 + \rho = \frac{S}{1 - \rho}$$

$$S(1 - \rho) = 1 + \rho$$

$$S - Sp = 1 + \rho$$

$$S - 1 = \rho (S + 1)$$

Substituting for $\rho$ in B we get:

$$P_m = \frac{V_m^2}{R} \times \frac{R}{(1 - (S + 1)/S + 1)}$$

multiplying the top and bottom line by $(S + 1)^2$ gives:

$$= \frac{(S + 1)^2}{(S + 1)^2 - (S - 1)^2}$$

$$= \frac{(S + 1)^2}{(S + 1)^2 - (S^2 - 2S + 1)}$$

$$= \frac{S^2 + 2S + 1 - (S^2 - 2S + 1)}{S^2 + 2S + 1 - S^2 + 2S - 1}$$

$$= \frac{S + 1}{4S}$$

Which is the magic formula.

It can be seen that if $S = 1$ then $P_m = P$; ie the power into the load is the maximum possible. As $S$ increases, the power into the load decreases.

This is all very interesting, I wonder how well it represents the real situation. The only way to find that out is to conduct an experiment. That I must do, sometime!

REFERENCES:


Did you know... Young, in NSW, was the first town in Australia to introduce electricity as a complete town-lighting system, in 1888.
TROPOSPHERIC SCATTER PROPAGATION

Ian Roberts ZS6BTE

INTRODUCTION

During the last 20 years or so, with the appearance of high power UHF amplifiers and low noise signal amplifying devices, a wide-band propagation mode capable of conveying VHF signals over distances of 800 km or more has become increasingly important in high priority commercial and military links.

The mode is loosely referred to in the industry as "tropo" or "tropo scatter". In recent years we have recorded interesting long distance VHF and UHF phenomena as noted by radio amateurs. It is evident though, that many of the reports are rendered "tongue in cheek", without much understanding of the propagation phenomenon witnessed and it is commonplace to see E, sporadic E, F, E'F' and F2 back scatter, tropospheric ducting and tropospheric scatter confused. The first five modes depend entirely upon solar radiation of the upper ionospheric layers for success, the latter two have nothing to do with solar activity. Tropospheric ducting is a freak occurrence involving inversions or peculiarities in the moisture content, pressure, and temperature domains of the atmosphere in the vicinity of the ground and hence may be detected by antenna systems. The mode is obviously unpredictable. Accordingly, with solar activity presently at a low level, the only hope of getting good tropo scatter is for the VHF enthusiast is tropo scatter. Radio amateurs, with their unique talents, and privileges, are in a particularly good position to add greatly to the existing knowledge of tropo scatter.

BACKGROUND AND HISTORY OF TROPO SCATTER

Marconi described tests in 1933 at 550 MHz over a 270 km path between Rocca di Papa, Rome and Cape Figari, Sardinia. In 1949 the USA froze the issuing of television broadcast station licences because of propagation beyond anticipated boundaries and co-channel interference on a massive and unexpected scale. By 1952 Bell Telephone Laboratories, primed by much theoretical speculation and increasing empirical evidence put forth their "Polevault" VHF over the horizon communications system. The US Air Force, in about 1955, took the plunge and commissioned a link over hostile territory, thereby obviating the need for numerous conventional line-of-sight links.

And that is where the mysteries of tropo scatter propagation have been largely hidden, in classified material, generally not available to the radio amateur. Additionally the precise methodology of tropo scatter remains ill-understood even in professional circles and most performance evaluations are based on empirical data collected during field testing.

CONCEPTS AND PARAMETERS

Various important parameters, peculiar to the mode, need further examination. The K-factor, ground height, and height of the scatter path to exist between Johannesburg and Port Elizabeth on 50 MHz using typical amateur radio gear? In order to address this question it is necessary to calculate or estimate the following:

Fig 2: Non-correlation between the signals received by two antennas with 1) opposite polarisation 2) physical separation of 100 wavelengths 3) slightly different beam headings 4) wide frequency separation.

quality telephone line or medium speed data with error correction.

A representative tropo link uses quad diversity, 27 metre parabolic antennas, 10 kW CW at 900 MHz, carries 132 FDM telephone channels, distance 500 km. A link of this nature would otherwise require 10-15 line-of-sight microwave stations.

GEOMETRY OF TROPO SCATTER PATH

\[ R = \frac{4}{3} \text{ earth radius (8448 km)} \]

\[ d = \text{ great circle path distance} \]

\[ h_1, h_2, \text{ respective antenna heights above sea level} \]

\[ h_1', h_2', \text{ height of radio horizons above sea level} \]

\[ d_1, d_2, \text{ great circle distance between radio horizons and respective antennas} \]

The scatter angle \( \Theta = \Theta_1 + \Theta_2 + \Theta_3 \) radians where \( \Theta_1 = \frac{h_1 - h_1'}{d_1} + \frac{d_1}{2R} \)

Typical scatter angles are up to 4 degrees. Each 1 degree increase in scatter angle introduces an additional 10 dB path loss and high value scatter angles are avoided in professional systems. This is easy when one can choose a mountain top site.

In Fig 3 the zone where the beams intersect is called the scatter volume and the properties of this volume define the quality of the scatter path.

AMATEUR APPLICATION OF TROPO SCATTER

Inspection of a standard 4/3k path profile indicates that one may not expect a local radio horizon \( d_1 \) and \( d_2 \) of more than 30 km assuming 20 m antenna height and level ground.

Under these conditions could one expect a tropo scatter path to exist between Johannesburg and Port Elizabeth on 50 MHz using typical amateur radio gear?
The terms were explained in reference 3) $T_m$ is about 460°K.

The receiver noise power ratio $P$ consists of the "pure" KTB noise modified to incorporate the receiver's noise figure $F$, which $F$ is the receiver's noise figure. If one assumes the receiver's RF stages to be $T$, and $T''$ with filter losses of $1\,\text{dB}$ then $F$ is about $2\,\text{dB}$. In a bandwidth of $1000\,\text{Hz}$ $P$ turns out to be $-168\,\text{dBW}$.

$$\text{Signal to noise ratio} \quad \text{SNR} = P_0 + G_1 + G_2 - L_1 - P_{\Delta} - P_\Delta$$

However, since an isotropic path loss was used about $5\,\text{dB}$ should be added to this. The ear should have no trouble tracking a beacon-like signal at this sort of SNR, indeed it should be continually audible with signal levels changing in sympathy with changes in the surface refractivity index.

For example an increase in this quantity from 280 to 300 would reduce the path loss by $4\,\text{dB}$ and increase the SNR accordingly.

**GENERAL**

As a matter of interest the typical heights of the scatter volume (assuming un-structed paths) are listed below:

- Distance 150km $300-2000\,\text{m}$
- Distance 300km $600-3000\,\text{m}$

The shorter paths are characterised by deep, fast fading. Long hops show a steadier path loss consistent with the median path loss for that month. It is suggested (in classified literature) that the best tropo conditions prevail during a hot summer afternoon, while the worst conditions occur during winter nights.

Much remains to be researched, or remains unreported. For example, what is the effect of a thunderstorm on the scatter volume? What happens when a tropospheric duct intercedes? Is the north/south path more favourably propagated as in FVTEP propagation?

Numerous high power RF sources exist in South Africa, notably the SABC's FM and TV broadcast signals. The photograph is of reception by the writer.

Fig 3: Geometry of Tropospheric Scatter Path

\[ L' = 57 + 10(0 - 1) + 10 \log(0.4) \, \text{dB} \]

\[ = 81.96\,\text{dB} \]

The factor $N_S$ is in terms of CCIR recommendations and is mapped globally. In South Africa the value of $N_S$ varies between about 310 and something much less (e.g. the generally taken 280) depending on water vapour content, pressure and temperature, to name a few components.

So $L_m = 213.14\,\text{dB}$ (this is an EME - type path loss)

**General Noise Temperature**

\[ \text{SNR} = \frac{(T_0 + T_m(1 - \alpha) + T_1 + T_m)}{g_m} \]

\[ \alpha = 0.8 \]

\[ T_1 = 290^\circ\text{K} \]

\[ T_0 = 290^\circ\text{K} \]

\[ T_1 = 150^\circ\text{K} \]

\[ T_m = 600^\circ\text{K} \]

\[ g_m = 32\,(15\,\text{dB}) \]

The shorter paths are characterised by deep, fast fading. Long hops show a steadier path loss consistent with the median path loss for that month. It is suggested (in classified literature) that the best tropo conditions prevail during a hot summer afternoon, while the worst conditions occur during winter nights.

Much remains to be researched, or remains unreported. For example, what is the effect of a thunderstorm on the scatter volume? What happens when a tropospheric duct intercedes? Is the north/south path more favourably propagated as in FVTEP propagation?

Numerous high power RF sources exist in South Africa, notably the SABC's FM and TV broadcast signals. The photograph is of reception by the writer.
of the Nelspruit (ch 24) TV transmitter on 495.25 MHz over a path of 270 km. This signal is continually detectable at the QTH in Pretoria which has an inferior radio horizon in all directions. Fading on this signal is in excess of 15 dB, with several cycles per second being typical over this distance.

CONCLUSION

A method has been illustrated whereby VHF signals can be propagated much further than the normal line-of-sight, point-to-point, condition.

REFERENCES

1) VHF-UHF Manual (RSGB)
2) Tropospheric Scatter (Point to Point Communications, Feb, 1984)
3) System Noise Temperature and System Performance (Radio ZS, Sept, 1982)

Reprinted from RADIO ZS, December 1984

ONE HUNDRED THOUSAND MODEMS

Telecom’s Datel Service has reached a milestone with the installation of its 100 000th data modem. The service began 16 years ago with 200 bits and 600/1200 bits services — today it offers speeds up to 72 kbits. At the end of the first year there were 565 modems in operation, and Telecom expects the 150 000 modem mark to be achieved in the early 1990s.

RICK MAKES IT TO THE GARDEN STATE

Rick, pictured in his endeavours wheel-chairing along Geelong Road, last month. — Congratulations Rick.
The Voyage of St Jupat

On 26th September 1985, on the 150th Centenary of the Hungarian Ship Construction Industry, two young Hungarians, Jozsef Gal and Nandor Fa, one a boat-builder, the other a mechanical engineer, left the yacht harbour of Opatija, Yugoslavia, on the shores of the Adriatic Sea, to circumnavigate the world.

The boat SAINT JUPAT, which they built themselves, has an amateur station on-board operating with the call sign HA4SEA/MM, or sometimes with the different prefix — HG4SEA/MM. Equipment is a FT7B (50W).

At the time of writing this article (7th January), they were sailing toward Capetown, South Africa, a destination they hoped to reach by the end of last month. There they paint the bottom of the boat and do a general clean-up of the equipment to eradicate the salt. Their journey will then take them in an easterly direction across the Indian Ocean to Sydney. They anticipate to arrive in Sydney by the end of March, or early April.

They intend to spend some time in Sydney to recuperate from the long trip, and to re-supply the boat.

After Sydney, they will sail to New Zealand and the various Polynesian Islands in the Pacific before returning to Europe in about two or three years.

Whilst at sea, they have regular scheds with various Hungarian Amateur Radio Clubs, among them HA4KYN. The times and frequencies of these scheds are: Daily on 3.660MHz at 0530UTC and 7.040-7.050MHz at 1030UTC. On Mondays and Thursdays at 1030UTC either on 14.260-14.270MHz or 21.260-21.270MHz depending on propagation. Times are approximate.

After their regular scheds they will be looking for contacts with other amateurs for a general exchange of news and information, and especially reliable weather reports.

Information supplied by Stephen Pall VK2PS. Additional information and photographs supplied by Lajos Nagyvati HA5SOH and kindly forwarded to Amateur Radio by Kan Stevens VK2SP.

Did you know . . . In 1855, the Sydney and Parramatta railway line became the first Government operated railway line in the world!
POLAR RADIO — 1912 style!

No radio equipment had been invented which could have helped Captain Scott’s ill-fated Antarctic Expedition. In this article, the author looks back to what was probably the earliest experiment in polar communications, with its first test taking place on the very day Scott reached the South Pole.

Sir Douglas Mawson, leader of the expedition.

Sir Douglas Mawson’s Australasian Antarctic Expedition left Hobart on 11th December 1911, to explore hitherto unsurveyed areas of the Antarctic coastline. They established Telefunken 1.5kW wireless stations on Macquarie Island in the South Pacific, some 850 miles (1 368km) from Hobart, and in Adelie Land, Antarctica. A further station on the Shackleton Ice Shelf, 1 500 miles (2 414km) to the west, was to be equipped with wireless for receiving only.

The story of the installation of these stations in a hostile environment, and the struggle to achieve and maintain communications, provides a fascinating picture of the state of radio in those times.

FIRST TESTS

The Macquarie Island station was located on a 300 feet (91m) high flat-topped hill with an open northerly aspect (to Australia), plus, hopefully, a good ‘set-off’ south to Antarctica. The peaty, wet ground was expected to provide a good earth, and the height of the hill allowed a shorter mast, 90 feet (27m), than would otherwise be required. The only apparent disadvantage was the need to manhandle the masts, petrol engine, induction generator, dynamo, and other equipment up the steep hill from the beach.

On 17th January 1912, the day Scott reached the Pole, the first tests were made, and signals were satisfactorily received in another part of the island. On 2nd February, Wellington, New Zealand, was heard calling Suva in Fiji, and three days later, as a taste of things to come, a howling gale brought the newly erected aerial down. After another two days, the wind abated and it became possible to climb the mast, re-erect the aerial, and tighten the stay-wires. On the 13th, contact was made with a ship, the SS ULIMAROA. The following night Sydney was worked, together with three ships, one of which, HMS DRAKE, sent useful time signals.

On 10th March, a two-way contact was made with Suva, 2,400 miles (3862km) away, and the next day news was received over the air of Amundsen’s successful expedition to the South Pole. Many ships to the east of Australia were now calling at night, but with continuing gales the aerial was in constant danger of collapse, requiring frequent checking and adjustment of stay-wires.

On 1st April, it came down again, and a chain was substituted for the rope which had previously secured it to the mast. The average humidity was 93 percent, and much of the equipment had to be shellacked for protection from excessive condensation.

Weather reports were sent nightly to Wellington, 1,000 miles (1 609km) away. HMS DRAKE continued to send time-signals, and Macquarie received weather reports from the station on Shackleton Ice Shelf.
Erecting the lower section of one of the masts in Adelie Land.

transmitted these to Antarctica where they eventually resulted in the fixation of a fundamental meridian in Adelie Land.

ANTARCTICA STRUGGLES

The party in Adelie Land had set up camp in January, but because of blizzards were unable to start erecting their wireless masts until mid-April. Twenty holes were dug in the ice to provide anchorages for the stay-lines. Dynamite was used to clear the site, and to make holes for the three 90 feet (27m) oregon pine masts. These were in sections, which were assembled aloft during many hours work, in 50-60mph (80-96km/h) wind gusts, and in temperatures well below zero. It was August before the aerial could be hoisted between the three masts, whence it was immediately blown down!

By September, all was ready. The engine and the dynamo turned, the note of the spark reached a crescendo, and a message was keyed to the world at large. Disappointingly, the only response was the crackle of atmospherics, and after several days of this, the only progress made was the discovery that, during transmissions, sparks could be ‘drawn’ from metallic objects in the hut.

Transmissions continued, still without reply, and on 13th October, one of the masts broke in a gale. Since it was now necessary to concentrate on the main purpose of the expedition, exploration of the Antarctic coastline, the aerial was left down, and all wireless experiments ceased.

MISSING DETECTOR

In the meantime, the second party, 1 500 miles (2 414km) to the west, were having even less success in wireless terms. Their base was established in February 1912, and the first blizzard they experienced brought both masts down. One only was re-erected, 37 feet (11m) high. It was then discovered that a detector, and other parts were missing, and hope of receiving signals from Adelie Land, and elsewhere, was abandoned.

“HAVING A HELL OF A TIME”

On Macquarie Island, however, wireless work continued successfully. The Pennant Hills high power station, in Sydney, asked for reports on tests it was making. News was regularly received from other land stations, and from ships in the Tasman Sea.

One of the transmissions from Adelie Land was heard faintly on 5th September, “Please inform Pennant Hills...” A J Sawyer, the Macquarie operator then called Adelie repeatedly for hours, but without success. On 29th, he heard another call, “Having a hell of a time waiting for calm weather to put up more masts”, and 3rd October brought, “We do not seem to be able to get Macquarie Island; all is well, though bad weather has so far prevented any attempt at sledging”.

MISSING PARTY

Equipped with a receiver, but no transmitter, the expedition’s ship, SY AURORA, set out in December 1912 to bring back the parties from the Antarctic. Upon arrival in Adelie Land, it was learned that Mawson, and two colleagues had not returned from an extended sledging trip. Whilst the ship waited, the broken wireless mast ashore was re-erected, in case it became necessary to leave a small party to search for the missing men.

By early February, the ship could wait no longer if it was to successfully collect the western party and not to be, itself, marooned in the winter ice. Shortly after sailing, Adelie Land radioed that Mawson had returned alone, his two companions having perished. The ship turned back, but a fierce gale prevented any landing or visual communication with the shore. Time was now vital, and once again the AURORA turned towards the west.

ADELIE LAND CALLING

With the ship gone, those left behind, numbering seven, settled in for the winter. The aerial was up again, and the operator, S N Jeffries, was at the wireless every night, calling and listening. On 15th February 1913, he heard Macquarie Island, but was unable to make contact. Five days later, Sawyer, in Macquarie, heard him and responded, “Good evening”, whereupon a Leyden jar broke down, and contact was again lost.

Later in the month signals were exchanged, and a message was sent, via Macquarie, asking the Governor-General of Australia to seek the King’s agreement to naming the land the expedition had discovered to the east, KING GEORGE V LAND. The first news received in return was that Captain

Scott, and his party, had died on their South Pole expedition. On 7th March, the King’s approval was received by wireless for that part of the Antarctic, lying between Adelie Land and Oates Land, to be named as requested.

The station was now operated every night from 8pm to 1am. Notes were made of the strength of the signals received, the presence of atmospheric static, and intermittent discharges from snow
The station on Adelie Land.

Particles — St Elmo’s fire — together with fading caused by auroral activity. Listening alone was a demanding task, it was difficult to hear distant sounds through the electrical interference. There was still a constant howling of the wind, plus the noise of the expedition’s dogs shelters just outside the hut.

Jeffryes spent entire evenings trying to transmit, or receive, a single message. A week of auroral displays would result in a complete blackout, then freak conditions would occur and traffic would be exceptional. He sometimes heard stations in Wellington, Sydney, Melbourne, and Hobart, and on one occasion worked directly with the latter.

He sent weather reports nightly to Macquarie, which were often received there when no communication was possible in the reverse direction. These reports comprised three meteorological code words, for barometric reading, velocity, and direction of wind. The velocities recorded were so high, (103mph (166km/h) on one occasion), that no codes then used to support an Inverted L directional aerial which, in August, as the first signs of the Autumn appeared, re-established contact and two smaller ones of 30 feet (9m), between which were stretched an ‘umbrella’ aerial with lead-in wires at the centre. In its place, two masts were built earlier, it had a centre mast at 90 feet (27m), and carried out scientific work in the fields of magnetism, biology, geology, glaciology, tide, and oceanography. Their wireless work was almost incidental to all this, but they demonstrated the potential of radio in polar exploration, despite the fact that in those pre-shortwave days, establishing radio communication at all was almost a year later than had been anticipated. The Aurora arrived at Macquarie in November, at Adelie Land on 13th December, and everyone was back in Australia by 26th February 1914. The station on Macquarie Island had proved its worth. It was taken over by the Australian Government, and continued to send meteorological reports to the Commonwealth Weather Bureau.

The expedition had discovered new lands, and had carried out scientific work in the fields of terrestrial magnetism, biology, geology, glaciology, tide, and oceanography. Their wireless work was almost incidental to all this, but they demonstrated the potential of radio in polar exploration, despite the fact that in those pre-shortwave days, communication was restricted in the Antarctic Summer to only a few hundred miles, at best.

Their determination and perseverance in establishing radio communication at all was remarkable. In these day of high technology, and material comforts, it is hard to visualise what they endured to get their messages through!

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AIR-WOUND INDUCTANCES

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PACKET RADIO — THE FUTURE

In an article, 'REPEATERS — THE FUTURE', published in February's issue of 'Amateur Radio', an outline was given of the changes that have taken place in the Federal Technical Advisory Committee since the last WIA Federal Convention. The article continued by giving an outline of two discussion papers on repeaters, one prepared by the Department of Communications and the other prepared by FTAC. This article summarises a paper that has been written on Packet Radio.

INTRODUCTION
Packet communication is a recent addition to the many varied modes of amateur radio communication techniques. It is still very much in the experimental stage, with developmental work continuing in many places, particularly the United States of America and Canada.

Packet radio was started in Vancouver, Canada, in 1979 with the development of a controller and modem by the Vancouver Amateur Digital Communications Group (VADCG). This design soon spread throughout both Canada and the United States.

With the personal computing revolution and the launching of elliptic orbit amateur satellites, high data communications around the world via radio became practical. This became the impetus for further development.

A major packet radio research and development organisation soon evolved in the USA, known as the Tuscon Amateur Packet Radio Corporation (TAPR). This group developed their own hardware and software, and has close links with the amateur satellite organisation, AMSAT.

The American group, backed by AMSAT, held several meetings in 1982 which culminated in the agreement to a new communications protocol much to the advantage of those activities. This protocol was accepted by the ARRL in March 1983 as the preferred protocol. The original Vancouver Protocol was modified in 1984 to overcome some of the limitations of that protocol.

Thus packet radio is still very much an evolving aspect of the Amateur Radio Service. This is in line with the aim of the Amateur Radio Service to be a 'Self-regulating' service, and to provide a technical investigation service. To enable the continued development of this (and other) aspects of the service, minimal restrictive regulations need to be imposed. The requirements generally be able to be carried on within the framework of the existing regulations.

DOC CONCERNS
The Department of Communications, however, had a number of concerns about packet radio.

These centred around unattended operation, bulk loss of data if the equipment was not used at regular times, and the equipment should be kept within the facilities. At the moment, unattended operation is not permitted, and the DOC were concerned that active users of this mode would leave their equipment running at times when they were not nearby. As the packet radio techniques require a transmitter to be keyed to acknowledge receipt of a transmission, this would result in a breach of the regulations.

The concern with bulletin boards was two-fold. Firstly, if they were connected to the telephone network, people with an amateur radio licence could use material to be transmitted over amateur radio. Secondly, material could be placed on bulletin boards which could be of a nature that, when transmitted over amateur radio, the regulations were broken. For example, it could be material of a 'commercial' nature. An unsuspecting amateur retrieving this information would cause an offence to be committed.

To minimise these types of problems, DOC were making suggestions such as password access only to these facilities, so that all users could be registered. Further, that all messages had to be vetted to ensure they complied with the rules.

Against this background, discussions started between DOC and the WIA, and with various groups of packet radio enthusiasts around the country. The result of those discussions has been the preparation of a paper, REVIEW OF AMATEUR RADIO SERVICE PACKET COMMUNICATIONS, by the Federal Technical Advisory Committee. This paper looks at the nature of packet radio and its need for regulation, and makes recommendations to the Wireless Institute for consideration, and if accepted, for forwarding to the Department of Communications.

DESCRIPTION AND USES OF PACKET RADIO
Packet communications is a means of transferring information from one computer to another in an essentially error free form, with a defined protocol. The protocol specifies the exchange of positive and negative acknowledgements. The data to be transferred, for example a line of text in ASCII, is bundled up into a 'packet', along with an address and error checking information. This information is then transmitted via radio to another station.

If this information is received correctly at the receiving station, then a short acknowledgement packet is sent back to the sending station. This allows the next data packet to be forwarded to the receiver. If a packet is received incorrectly, then the sending station is advised, and the original packet is re-transmitted.

The address field usually contains information relating to the identity of the sending and receiving stations. This can either be the complete call signs of the stations involved, or a standard interpretation of the call signs.

The equipment used includes a transceiver, a terminal node controller (TNC) which controls the communication system, an input/output device, which can be either a computer or a terminal, and a modem to convert the signals from the TNC into a form that can be handled by the radio equipment.

In addition to the above hardware, software to control the TNC and to enable the input/output device to communicate with it is also required.

The uses to which packet radio are put are limited only by the capabilities of the radio and computer equipment, and in this respect, they are limited to a considerable degree by the size and capabilities of the TNCs. Some of the potential wide range of uses:

* Point to point written communication. Although this is similar to RTTY, it is enhanced by virtue of the 'store and retrieve' capability. The inflating of the incoming message as it arrives, as the system will automatically 'store' it. The message can then be 'retrieved' at a convenient time.

| Distribution of text files such as newsletters, articles etc. These can be prepared off-line using a word processor package, and then distributed 'on-air' as appropriate.

| Transfer of computer programs. By providing an essentially error free communications mechanism, large programs in both source code and binary formats can be transferred easily and reliably.

| Emergency communication capabilities could be enhanced by the use of packet radio techniques. This would be especially so where lists of names and addresses and other similar

This information had to be transferred efficiently and accurately.

* Digital transmission stream for coded analogue information. For example voice, slow scan television pictures, and facsimile etc.

* Bulletin boards, for the distribution of exchange of information, new techniques etc.

* Shared use of 'network' resources. Such as high quality printers, extra computing power etc.

* Remote monitoring and control of unattended facilities such as a voice repeater.

Although the application of packet radio communication is not yet too common at the moment, it is spreading overseas as more stations become involved in the techniques. Overseas contacts have been made via satellites and via direct HF contacts.

PROTOCOLS
The development of software and protocols used in amateur packet radio networks has been influenced by several factors.

* Existing, proven commercial standards should be used wherever possible, making only those changes which are necessary to allow operation in a half-duplex shared channel environment.

* The informal nature of amateur radio precluded against protocols requiring a central control site for access control and address assignment.

As indicated in the introduction, two separate protocols have been developed, the first in Canada and the second in the USA. Both protocols are based on standard High Level Datalink Control (HDLC) frames and are loosely modeled on the CCITT X.25 packet switching standards. The CCITT standard specifies transport protocol address field formats and error recovery procedures.

The Canadian protocol is usually known as the Vancouver Protocol after its city of origin, while the US protocol is known as AX.25, after the CCITT packet switching protocol X.25, which is it is claimed influenced its development.

Each packet transmitted contains various types of information. This information includes synchronising, addressing and control information, as well as the actual 'data' being exchanged.

Various types of Terminal Node Controllers (TNCs) have also evolved. Some TNCs will handle only one protocol, while others have been designed to handle more than one. The balance between the hardware and software also varies, making some TNCs easier to modify for new developments than others.

UNATTENDED OPERATION
Repeaters and beacons are the most usual form of unattended operation encountered in the amateur service. However, packet radio by its very nature, expands these requirements. In addition to the requirements for unattended radio facilities, the TNC and software for this capability in conjunction with a repeater, it also forms part of the operation of a normal packet radio station.

In order for the receiving stations TNC to confirm the reception of a packet of information, it is necessary for it to key the transmitter and send...
an appropriate acknowledgement packet. To ensure that the transmitter is not keyed on for an excessive time and thus 'disable' the packet channel, it is necessary to incorporate fail safe watch-dog timers. These are usually implemented in both hardware and software and disable the transmitter should it not reset within a specified time.

While voice repeaters are normally located on the highest site around, the experimental packet repeaters are currently located in home or club premises. This is necessary because of the care that the sophisticated computer systems require. Further, such computer systems are normally associated with other facilities such as information storage and retrieval systems.

The most common form of unattended information storage and retrieval systems is the 'Computer Bulletin Board'. These are common in the United States and becoming increasingly popular throughout the rest of the world. Currently there are a number of these in Australia connected to the telephone network.

The computer bulletin board is designed to simulate a cork pin-up board, typically located in a community or library facility. A person viewing such a board can look at the headings of various messages left by others under a number of subject headings. Selected messages can then be retrieved and read in detail, and new messages can be posted. However, a computer offers the ability to set varying degrees of access so that the privilege of posting a message can be given to only a few people. Reading the messages can also be selective - some messages being read by all users, others being read by entering a password. This allows the owner of the system to control and vet the way it is used.

The least privileged access, 'Visitor Access', can be available to everyone, while an authorised user would need to be independently registered, supplying various details for this process, such as their name and address. It is considered that a variety of uses should be permitted forms of operation for amateur packet radio stations. However, various classes of licence may be required to cater for these types of operation.

RESPONSIBILITIES

The regulations that govern the amateur service have always allowed the amateur to develop and construct equipment to meet his needs. These regulations have prescribed the general technical requirements, but have not made any comment on the specific designs to be used. It is believed that this arrangement can be appropriately extended to packet radio communication.

Further, the regulations have always clearly laid down that the responsibility for the content of a transmission is always with the transmitting station. All transmissions, or groups of transmissions, are required to be identified by call signs and some form of log is often required.

Again, it is believed that this arrangement can be appropriately extended to packet radio. All packets transmitted contain call sign information, enabling the originator to be identified. Further, all remote use facilities, such as bulletin boards, can be logged, with all essential information recorded.

While it is likely that the operator of a computer system might review all the messages before allowing them to be posted to a bulletin board, this should not be essential providing the user is appropriately identified, and the incoming transmission logged. Thus the originator of any material transmitted is likely not to be exchanged via amateur radio can be clearly identified.

It is therefore proposed that there be no restriction of access, by password or any other mechanism, for devices that extend the range of amateur transmissions, such as repeaters. However, it should be necessary for the operator of a computer system with bulletin board or other store and retrieval system to log and identify all incoming messages on such a system.

As the number of packet radio stations increases, and as stations are established to provide repeating and computer access capabilities, it is likely that networks will be formed. Again, no objection should be offered to this providing all stations are appropriately licensed.

As the number of packet radio stations increases, it is likely that networks will be formed. Again, no objection should be offered to this providing all stations are appropriately licensed.

Accordingly, it is suggested that, where any system is connected to a telecommunications network and the amateur service, material originated via the telecommunications network cannot be made available for transmission over the amateur radio link.

As indicated in the introduction, amateur radio is an experimental activity. This experimentation should be encouraged within broad guidelines. It is considered that the guidelines presented above, together with the history of self-regulation of the amateur service, will ensure that packet radio will be an appropriate way of continuing the philosophy of amateur radio.

CONCLUSIONS

After consideration of the various issues raised by the development of packet radio communication, the Federal Technical Advisory Committee presents the following recommendations for adoption by the Wireless Institute of Australia:

1. All packet radio protocols which ensure that call sign information is contained in each packet should be permitted, and that no requirements be placed on equipment design except those generally necessary under the existing Amateur Radio Service regulations. This includes both currently used protocols, Vancouver V2 and AX.25.

2. Any amateur radio operator may set up a packet radio station under the terms of his existing licence. Further, such a station may operate in the unattended mode for the purpose of receiving information from another packet mode station providing that suitable fail-safe firmware is incorporated to ensure that the transmitter cannot remain keyed on for an excessive period of time.

3. Any group of amateurs may apply for a licence to establish and operate a range extending or repeater device for packet radio.

4. Any amateur or group of amateurs may apply for a licence to establish and operate a station which provides computer resources for other amateurs. Such an application should be in the form of a conventional repeater licence. It should not be mandatory for restrictions to be placed on access to this facility by appropriately licenced amateur operators, this being up to the discretion of the licenced operator. All calls to this facility are to be logged by the system, the information to be recorded to include call sign information and time and date. Further, if such a system is connected to a telecommunications network, then material originated from such a network cannot be made available for transmission over the amateur radio link.

Further, a system licenced under this section is permitted to automatically originate a call over the Amateur Radio Service and deliver a previously lodged message.

If the above recommendations are accepted, both by the WIA and the DOC, then amateur radio operators will be able to continue exploring new areas of technology in the traditions established over the last 75 years.

THE NEXT STEP

Complete copies of issue 1.2 of this paper have been circulated to all Divisions of the Wireless Institute. It is currently undergoing its final refinement, pending its presentation to the 1986 Federal Convention in April 1986. Any comments or suggestions should be in writing and as soon as possible, either to your Divisional Technical Advisory Committee or to FTAC. This will enable them to be considered prior to the printing of the convention papers. It is not until the Chairman has considered this paper and voted to accept it, either in part or in full, that it will become WIA policy.
At the end of June 1983 I took some leave to attend Europe's greatest annual amateur "get together" at Friedrichshafen, located on the shores of the Bodensee (Lake Konstanz) in southern Germany with my XYL Monique. During our stay it was our intention to look for a suitable location for our 1984 annual holidays where we could combine a number of activities including, of course, amateur radio.

At the convention, we spoke with Franz DJ9ZB, who has operated as HB0BOE on a couple of occasions, during contests. Franz gave us the address of his contesting QTH in Liechtenstein which was about one and a half hours drive from the location of the convention. At the meeting I received a free licence to operate from DL, OE, HB9 and HB0 with my 2m rig in the car.

En route to the area Franz had told us about, we called in on Hugo HB0LL, and made a telephone call to the land lady that owned the holiday houses, making an appointment to see them and getting further directions. On arrival we were shown what was available and Monique and I decided on the adjacent house to the one that Franz used, as it would be more suitable for the children.

Our holiday QTH. To the right, Franz's holiday retreat.
The principality of Liechtenstein, 158 square kilometres in area, came into being in 1719 and now has a population of some 26,000. Since 1806 it has been a sovereign territory under the Princes of Liechtenstein, with its own parliament and government. In 1924, it accepted the customs jurisdiction of Switzerland and the Swiss franc became HB0's official currency. As Liechtenstein is integrated into the Swiss economic system, there are no longer any currency.

The surrounding countries of this principality are Austria and Switzerland. The border of HB0 and HB9 is made by the river Rhine in the Rhine valley.

Getting a licence in HB0 is very easy and fast. Your application must arrive thirty days prior to your intended stay and I had my request back in ten days. One must use their own call sign /HB0.

THE HOLIDAY!

The bookings were made for the 17th July 1984 and as our destination was about a twelve hour drive from my QTH in north western Belgium, we made an overnight stopover in southern Germany and continued on the next morning under a very dark and overcast sky. We arrived in Vaduz, the capital of Liechtenstein, which is about 450 metres above sea level, around 1100 hours local. Just outside the capital we started to climb and at Triesen, 460 metres ASL, we started to ascend to the Alps. It took about 45 minutes to accomplish the twelve kilometre drive to our destination Masescha, which is 1220 metres ASL. The higher we got the more fog we ran into and when we arrived we could barely see the house.

As soon as we unloaded the car, and since the weather wasn't conducive to go walking, it was a good excuse to put up the antennas. Seeing the house before was an advantage as I made a small wooden support to suit the roof and had allowed myself sufficient co-axial cable and wire to erect the antennas. When dusk descended with the fog still present I was ready to come on the air with dipoles for eighty and forty and a 12AVT trap vertical erected next to the house. The location gave me a nice take off for radio signals but I was cut off in some directions by the steep mountains rising to nearly 2000 metres. This resulted in no propagation at all to Asia, VK (short path) and very little propagation to the USSR.

The next morning when we arose, the snow covered Swiss mountain tops in front of us on the other side of the Rhine Valley glistened in the sun, and the fog had completely disappeared. The weather was beautiful and it stayed like that for the next eight days. In the mornings we relaxed and in the afternoons, long walks were taken into the mountains. This worked well with the propagation as twenty metres was at its best in the morning except for some African and South American stations. Fifteen and ten metres didn't open at all for any DX during our stay. I had just started my first operation on fifteen with some Europeans, when my attention was drawn to a very strong SSB station 20 kHz down from my operating frequency. Soon I found that I had an amateur neighbour, Hugo HB9WQ, who was also spending his holidays, together with his family, in the Alps. His QTH was located on the same mountain side as we were, but about 300 metres higher. Hugo was QRV as HB0WQ/P. This QSO was the first of many that we had on various bands during our vacation and an "eyeball" sched was set up for the Sunday morning.

My friends from the Chiltern DX Club in the London area had asked for some 160 metre activity and I spent a morning putting up two eighty metres dipoles sloping down from the mountainside above the house, to the lawn in front of the house.

Being of a curious nature our next walk took us up towards Hugo's location. The QTH was found easily because of the wire antennas, a dead give away, but Hugo and the family were out and we would have to wait to meet them as arranged. The access to his QTH was very steep and virtually inaccessible by car, a credit to his driving ability. His QTH incidentally was close to the hotel in Gaisfeld where Martti OH2BH, operated as HBOAZD in the 1976 CQWW CW Contest, one of, if not the best, position in HB9 to operate from.

In the evening I made my first contact on 160 metres, quite an experience as I was new to this band. Prior experience had been a few contacts as ONSNT/ KH6GOV, HS2AKP and C31UI). The first one to make it into the log was Roger G3KMA, followed by a number of Europeans. A number of W's were heard but unfortunately not worked. (This band is still not allowed in Belgium.)

NEW NEIGHBOURS!

Early in the weekend we gained new radio neighbours, Pat DA2AA and Allen W3ZNB, who had come over from Munich for a week's operating and were staying at the QTH of Klaus DL7NS/HB0 which was about 300 metres from us on the same altitude but with a "mountain" between us. Klaus is quite active and his multicolour card of the area is known world wide.

A view of the Rhine valley. On the left HB0 and the right HB9.

The higher we got the more fog we ran into and when we arrived we could barely see the house.

A view of the Rhine valley. On the left HB0 and the right HB9.

MY QTH IN THE ALPS

The bookings were made for the 17th July 1984 and as our destination was about a twelve hour drive from my QTH in north western Belgium, we made an overnight stopover in southern Germany and continued on the next morning under a very dark and overcast sky. We arrived in Vaduz, the capital of

Hugo HB9WQ/HB0WQ/P.
rich flora and breath-taking views of the valley. Hugo had taken his 2m hand held with him and after a couple of CQ's was answered by Hans HB9CFD/M. Hans with his XYL were enroute to Liechtenstein. The call sign sounded familiar to me and my question of 'had he been QRV in Sri Lanka' brought a positive response. He had been 4S70M and 4S83OM, a special prefix for WCY in 1983.

Prior to closing down on 40 metres just after sunrise I worked ZL4BO and ZL2ANR, who were putting some nice signals in on SSB. Now was the time to shorten the legs of the dipole for 30 metres and make a few more Europeans happy with a new country. I had already worked a few with the 40 metre dipole but the SWR was a little too high for comfort.

In the afternoon it was time to sadly dismantle the antennas so that we could leave early next morning. Next morning as it happened it was raining very heavily and I was glad that I had given up my last evening of operating.
BILL CLEANS OUT HIS SHACK

Bill Blitheringtwit, acting under orders received from his better half, had decided it was about time he cleaned out his shack. He stood in the doorway and stared at his little room. He had to admit it was appalling. But, on the other hand, it was no worse than others he had seen. All the same, there was no way of getting out of it this time. He had received a clear and unambiguous instruction that unless something was done about it the room would be permanently locked up and the key thrown away.

He decided he would start where he was standing and so he went out to his yard and fetched in a big plastic dustbin to hold the things he was throwing away. Near the door was a huge pile of magazines. He sat down and started to read them. Some of them dated back to 1930. He read quietly and was still living in the old days, when a loud commanding voice called him out for lunch. So far he had done absolutely nothing.

He returned later and continued reading, occasionally tearing out a wanted page or two and throwing the remainder into the rubbish bin. Pretty soon it was filled to the top and far too heavy for Bill to lift. A brilliant idea struck him. He would fetch in his old trolley.

So out he went and, after rescuing the trolley from the back of a shed, where it had lain for years, wheeled it into the house. His wife did not see the long scratch he made on the side of the fridge as he went through the kitchen, but she did notice the twin black tracks across the kitchen floor. Passing down the hallway, Bill managed to get a couple of vases before he got to his den. The trolley was a bit wide, but he forced it through the door and somehow got the overloaded rubbish bin aboard.

Slowly he laboured the unwieldy contraption through the doorway, causing more scratches to the door frame, and made his uncertain way down the hall. Another ornament bit the dust and by this time his wife was now in a fury. As Bill wheeled she began to scream at him and beat on his back with her fists. In the area of the lounge the wheels of the trolley got caught in a rug and he was sent off balance. There was a moment’s crisis as everything started to go. The rubbish bin fell over and the papers spilled across the floor. Bill sat heavily on his posterior and, as a final touch, the trolley fell clean in the middle of a flower display his wife had completed only a few hours before. With the torrent of invective raging round his ears, Bill reflected on his plus and minus philosophy. All this was definitely a minus situation. But it had a plus side to it. Maybe it was a message to the little woman that shack clean-ups should not be carried out too often — if at all!
For years radio amateurs have had mixed success in tackling the Power Line Interference (PLI) problem. Sometimes a continuous source of interference was identifiable by a DOC inspector and he would request electrical authorities to look at the fault. Other times the detection of intermittent or multiple sources was so time consuming for authorities that we either stopped complaining or switched off.

Another alternative is to do the detection yourself. Using an ultrasonic detector kindly loaned to me by Eddy VK2ZJ, of Kiel Electronics in Sydney, I was able to locate sparking at a 240V power pole within 500 metres of my home station. The ultrasonic detector works on the principle that sparks create ultrasonic noise. Using this hand-held device one aims for the greatest noise and then identifies its source through a pair of built-in sighting holes. This study was conducted at all hours of the day and night over a one month period; 19th February-19th March 1985.

WHY SHOULD AMATEURS LOCATE PLI SOURCES?
Because authorities would not have the resources to spend one month conducting such time-consuming field studies.

IS PLI NORMAL?
During my study I found that around sunrise, or during wet weather, or on cool windless days no Power Line Noise (PLN) exists from 1 to 200MHz. Thus no sparking across insulation would seem the normal state of a correctly functioning 11kV power system. The ultrasonic detector mounts the visits by DOC inspectors, who could not find any interference coinciding with their visits. At these times there was no PLN on my amateur radio. My equipment is as sensitive as the best receiver and aerial system typically used by radio amateurs — if PLN were normal it would certainly be capable of picking it up 24 hours a day. However, it was not.

Resonant Frequencies which the Spark Curve Produces can be found in overhead high voltage lines, 11kV up. There are always exceptions to these trends. Since everything is connected along PL systems one can be led to the wrong conclusions as PLN can propagate for several kilometres. I remember having to run down the road and kick a pole to make the noise stop on 7MHz — the pole had loose nuts and bolts. Noise would wipe out my reception on 160m.

The Loose Nut and Metal Support seen on the Top Cross Arm which carries 11kV. The Bottom Cross Arm carries 240V. The sparking is detected under the three nuts holding the Top Cross Arm Insulators. The effect of the Loose Nut on the Metal Support Is the Resonant Frequencies which the Spark Current will trigger.

Equally, one imagines that electricity authorities, with their income of millions of dollars, would be willing to spend a small percentage to rectify similar problems. Enormous public relations and goodwill can be gained by electricity authorities when, like radio amateurs, they take an interest in reports of interference and act as soon as possible.

WIA, DOC AND ELECTRICITY AUTHORITIES
From discussion with DOC Headquarters, Canberra I understand that interference affecting reception of amateur radio, TV or radio broadcasts is treated equally. There is in each case equal concern and equal resolve to reach a solution. There is agreement that, where amateur radio is the cause of interference and thus responsible, so too if PLN is the cause of interference to amateur radio, electricity authorities must rectify the problem.

Electricity authorities generally will not accept interference reports unless they have been checked by DOC. Because it is impractical to duplicate a one month study, as in my case study, I am suggesting that where interference from intermittent multiple PLN sources occurs to amateur radio that state DOC adopt advisory reports by WIA appointed PLI investigators. This is possible under the new Radio Communications Regulations.

WILL STANDARDS FOR PLN LEVELS HELP?
DOC has not yet adopted standards in relation to PLN.

Henry W4PZV, in 73 magazine February 1980 says: "Fortunately for all of us in the United States, there are no minimum limits established for radiation of interference from overhead powerlines. Had there been a minimum level established, we might have had to live with it, no matter how disruptive it was." The US FCC considers overhead powerlines to be an 'incidental radiation device'. FCC Rules Section 15.25, Part 15 states: "An incidental radiation device shall be operated so that the radio frequency energy does not cause harmful interference. In the event that harmful interference is caused, the operator of the device that promptly takes steps to eliminate the harmful interference. " FCC Rules Section 15.4(b), Part 15 define harmful interference as "any emission, radiation or induction which seriously degrades, obstructs or repeatedly interrupts a radio communication service".

AMATEUR RADIO RECEPTION
Prior to my study outlined above, I directly requested the electricity authority to remove, from outside my front yard, a pole-mounted transformer which emitted S9 noise on 1.8MHz. The transformer was revamped and returned to the pole some two years ago. I have had no noise since on 1.8MHz. Now my problem is to contact those USA 160m operators who keep telling me they just hear someone calling under their S6 noise level. I never imagined that the S-meter could read zero on 160m.

Transformers normally cause only low frequency noise. Noise on frequencies between 4MHz and 200MHz is most likely due to sparking in overhead high voltage lines, 11kV up. They are always exceptions to these trends. Since everything is connected along PL systems one can be led to the wrong conclusions as PLN can propagate for several kilometres. I remember having to run down the road and kick a pole to make the noise stop on 7MHz — the pole had loose nuts and bolts. Noise would wipe out my reception on 14, 21 and 28MHz when a whole row of poles was replaced two years ago outside the VI2BVS QTH. In addition, all nuts and bolts were secured when the Transformer was revamped, and no problems have since been observed, especially during the intensive one month case-study. It is expected that a tightening of hardware, or cleaning of Disc Insulators, Metal Parts and/or tensioning will cure the PLN at this case-study.
The Top Cross Arm shows the Double Disc Insulators which often lack tension. The Cross Arm below these shows the Underground Cable to Overhead Lines passing through the Insulator sitting on a metal base. Noises can be detected where the cable enters this Insulator. The Stand-off Insulator is a Lightning Arrestor.

Disc Insulators at Dead End Pole. Notice how loose the three bottom power lines are. In fact they can be seen swinging in the wind and heard sparking on the Ultra-sound Detector.

New Construction Single Metal Support with no Earth Strap Bonding Wire under the Insulator pins showed no noise.

ADDITIONAL NOTES

Rainy days often provide a short circuit allowing leakage currents to flow across a junction instead of sparking over. In dry weather sparks can occur at loose points, corroded points or moving points.

Into the field take an ultrasonic detector (sometimes you can even hear sparks by ear, a 27MHz ‘Walkie Talkie’ without a built-in noise limiter (this is not a good way to track the noise source but will give you a rough indication of noise level even though it will vary greatly — it’s most important purpose is to tell you if the noise is still occurring). Also take binoculars to note any visual irregularities on the pole hardware, paper and pen and flashlight for night patrolling. The best way to track sparking sources is to systematically check all poles in your area when noise is occurring, then check sources when no noise is heard as extra correlation to the interference. When using the ultrasonic detector you will learn to distinguish between sparks, insect noises and gas or underground water flows.

A Tasmanian radio club purchased such a detector and lends it to its members. Try doing PLN studies through your club, WIA, or DOC because your electricity authority may be unhappy with a seemingly haphazard report. Form a group to combine the skills in your area on this matter. My thanks for providing so much assistance in this project goes to Tony VK3QQ, former EMC co-ordinator and Eddy VK2JJ of Kiel Electronics, 26 Gammell Street, Rydalmer NSW 2116.

References provided by Tony VK3QQ included:
- "The Location, Correction and Prevention of RI and TVI Sources from Overhead Power Lines" — IEEE: tutorial course, A Continuing Education Service of the IEEE Power Engineering Society, Course Text 76CH1163-5-PWR.
- "In Search of Power Line Interference" — how to find it and get it stopped, — 73 magazine, February 1980, page 66.

Remote Australian communities of 200 people or more should have at least one additional commercial radio service later this year. Communications Minister Michael Duffy said he expected to act quickly to introduce additional commercial radio services once the Forward Development Unit of DOC finished its report on the future of commercial radio, by the end of this month.

TEST EQUIPMENT

AUSTRALIA'S LARGEST RANGE OF SECOND HAND:

Hewlett Packard
Tektronix
Marconi
Solartron
Boontoon
BWD
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AR86
W Felton OA-28F, one of the most consistent transmitters on the air today.

Bill Crawford, NSW Radio Inspector, who is not half so formidable as this picture makes him out to be. He is one of the pioneers of radio in Australia.

WB Crocker OA-2BB, an old NSW amateur, who has just returned from a trip to England and is enthusiastic over the efficiency of British transmitters.

Trevor "Wattle" Watkins OA-7DX, one of the best 'fists' in Australia. He now operates on crystal control.

Payson R Gould NU-9DHP, RADIO's NW USA correspondent. His signals are consistently heard in Australia.

Phil Renshaw OA-2DE, Vice-President of the old WIA, a pioneer radio amateur, who is not often heard these days.

Harry Kauper OA-5BG, also chief engineer of SCL. He was responsible for the Stopwith-Kauper gun mechanism, which enables firing through the propeller field of an aeroplane.

H T Simmons, ex OA-6KX, now 3XX, whose signals are well received. He is returning to Perth shortly, where he will be heard again under his old call sign.

Max Howden OA3BO, one of the first Australians to QSO England on the 80-metre band. 3BO has now recovered from the disastrous fire which destroyed his whole station some time ago.

The above reprinted page was contributed by Peter Alexander VK2PA, and may bring back some memories for Old Timers.
YOUR FIRST WIRELESS SET

WHEN YOU HAVE YOUR FIRST WIRELESS SET INSTALLED FOR YOU—

DO NOT DELAY—

TO TAKE FULL ADVANTAGE—

OF ITS ENTERTAINMENT—

FOR ONCE—

YOU GET

BITTEN—

WITH THE SUBJECT—

YOU WILL—

NEVER AGAIN—

HAVE—

MUCH—

LEISURE FOR LISTENING.

Reprinted from PUNCH magazine and contributed by Ivan Huser VK5QV.
The Fourth Annual SET took place from 22nd-24th November 1985. This event allows any Australian amateur radio operator to simulate a disaster, or event, and plan how to provide health and welfare communications services via the daily schedules of the Australian Traffic Network (ATN).

**COULD NOT PARTICIPATE**

The SET weekend used by the ATN is made to coincide with the Wireless Institute Civil Operations Network (WICEN) weekend, but also includes all WICEN operators, under their own particular scenario and network, mobile service, national, or international links, which are normally co-ordinated by the WICEN operators.

This year, NSW WICEN, with its busy schedule, could not participate, and the ATN, only just recovering from the Mexico City Earthquake communications side-line, was also asked to avoid participation in the weekend. However, having read two articles about Packet Radio for beginners in two QST magazines, a SET combining Packet Radio became an exciting prospect.

QST, October 1985, p64, says “Packet Radio is hot! It is the hottest thing in amateur radio since the first WARC. Would YOU be interested?”

In all three previous SET exercises, the weak point in providing communications has been the international link. A handful of messages have been received overseas but there is no propagation again until the next day. Even during the Mexico disaster hundreds of messages were passed nationally to collecting points but it was then a problem to pass them quickly and accurately overseas. Luckily, with this operation, Overseas Telecommunications Commission (OTC) provided free telephone links between amateurs in Australia and the USA. The US amateurs then relayed the messages, via amateur radio to Mexico City.

**LET'S TRY A NEW METHOD**

But, what if the next disaster is in Australia and OSI links are down, or the scenario is some area of the world? Would Packet Radio be the answer for relaying hundreds of messages over small available propagation paths?

In Australia, we may ask, how is this different from OSI? Baudot? Baudot is normally less than 100WPM, but Packet is transmitted faster than 360WPM on HF and faster than 1440WPM on VHF; and it also guarantees reliable transmission.

I set myself a project to see if a beginner who knew nothing about computers — I had always completely avoided them — could set-up Packet Radio and have it online.

**WHEELS IN MOTION**

A phone call was made to Packet Traffic Handler, Don NI6A, who suggested a PK64 Black Box was all that was needed. The relevant equipment was then ordered from the United States.

The Countdown to SET 85 then began — at minus three weeks the computer arrived. There was then much delving into the manual and many conversations on-line to find out specific meanings.

Minus weeks — the PK64 arrived and it was back to the manual again. Incidentally, the PK64 also works on AMTOR, RTTY, ASCII, and Morse, but I decided to wait until after SET to read about these operations.

Minus one week and the fast-switching linear amplifier, designed for the increased US amateur power limit arrived.

A second PK64 was available for a one week period over the ATN and was given to John VK2JP. With only a novice licence, John was not able to send but could only receive. John is a 14 year-old computer buff and he was able to assist me to quickly digest some of the ‘ins and outs’ as we experimented for three days leading up to SET.

**BEACON IN OPERATION**

With only the briefest of two-way contacts prior to SET, 0800UTC Friday arrived. The PK64 was set on Beacon Mode and 30 seconds on 14.103.5MHz LSB was selected. Every 30 seconds an automatic message was transmitted — "VI2BVS Beacon — simplex on 28.400 MHz. Welcome to the Australian Simulated Emergency Test".

If anyone called me (and you can have more than one QSO on Packet) the PK64 would then automatically transmit the message "VI2BVS Beacon — Please leave simulated welfare message in APRIL format, then disconnect. Thank you!".

Stations from all over the USA lit up my TV monitor with Beacons, Bulletin Boards, Mail Boxes, and QO Calls — it was like watching a high adventure on television. Laboca, in Norway, said he was the only Packet Bulletin Board station in Europe and this was his first contact with Australia! We communicated for about an hour.

**AIMS OF SET**

The three aims of SET are —

**To find out our strong points and limitations in providing emergency communications.** SET provided me with the incentive needed to get Packet operational at my station. Others activated the now familiar 29.500MHz Emergency Preparedness Sydney Traffic Net check-in frequency, which SET has helped to establish for quick activation in time of emergencies. SET could lead to the development of links with other countries to help amateurs gain experience in communicating, using standard procedures under simulated emergency conditions. Many checking into the VI2BVS Beacon were not familiar with traffic handling or the APRIL format. Packet allows detailed such standard procedures and formalities to be sent quickly.

**To provide a demonstration to members of the public (this is normally the ATN function) and to serve agencies such as Red Cross, Civil Emergency Authorities, Salvation Army, etc (this is normally the role of the AIRS).** I kept the automatic Packet Beacon at the Mexico City Earthquake, and I kept the automatic Packet Beacon company during the night.

**PLENTY OF PUBLICITY**

During SET, Radio 2KY, in Sydney, with Dave VK2WNH, well-known amateur and news-reader at the mike, carried several news items about the event. SET concluded at midnight on Sunday.

AAP released a story Australia-wide to all newspapers, radio, and television. Both Packet amateurs and a home computer, together with the Mexico City experience, were being used to develop an improved emergency communications service for the public. AAP were particularly interested in any details of further upcoming amateur radio events.

Packet Radio allows one station to be relayed through another Packet station on the same frequency. This is called Digipeating. One of the next experiments developed from this SET experience is to set up a 124.103.5MHz Packet station in the middle of a shopping centre and, in a simulated disaster, have the VI2BVS home station, with directional aerial, beaming the USA digipeat the signals, subject to DOC approval.

One of the American experiences has been the usefulness of using two home computers operated by two teams. One to maintain the Packet link, the other to be involved with the actual welfare message storage onto disk, using disk drives. This would be useful, although for this first SET exercise one computer was used to perform both functions.

More information on traffic handling and related experiments and tests can be obtained by participating in the following daily third party traffic networks.

**AUSTRALIAN TRAFFIC NET (ATN) at 0930 UTC on 3.570MHz + -1 Novice Phone Section.**

**WEST AUSTRALIAN TRAFFIC NET (WATN) at 1100 UTC on 3.620MHz + -1 QRM.**

**AUSTRALIAN AMERICAN TRAFFIC NET (AATN) Primary at 0830 UTC on 21.415MHz, Secondary (if needed) at 0800 and 0900 UTC on 14.285MHz. Also 0800 UTC on 7.228MHz.**

**INTERNATIONAL ASSISTANCE AND TRAFFIC NET (IATN) at 1130 UTC on 14.303MHz.**
**MODEL 7018 GR**

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"THE POWER OF TOMORROW — TODAY"

**THE R F AEROSPACE ... GRID REFLECTOR YAOI ARRAY.**
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**MODELS: 7018GR and 7011GR 70cm YAGI ARRAYS**

**MODEL: 206GR 2m YAGI ARRAY**

---

**A SELECTION OF R F AEROSPACE — ANTENNA SYSTEMS**

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<th>Model</th>
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<td>Folded Dipole - 70</td>
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| HD604 Full Size | was $199 special $99 |
| HD1010 Full Size | was $199 special $99 |
| HD10104 Full Size | was $239 special $145 |
| HD10105 Full Size | was $319 special $169 |
| Folded Dipole - 2m | $130 |
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AX-S2 2W 3ch with ch88 fitted, hand-held HF Transceiver . . . $95 was $139

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HL-160V2S, 25-150W 2m......................... $529
HL-110V, 3/10-110W 2m linear.................. $449
HL-62V, 10-60W, GaAsFET........................ $249
HL-35V, 3-30W, GaAsFET................................ $125
HL-65V, 60-60W, 6m, GaAsFET................... $249
HL-65GX, 1kW grounded grid heavy duty 160-10m, pair of 4X150As........................ $250
HL-3K, 3kW 160-10m, 2x3CX800A................. POA
HC-200 tuner w/3 pos ant sw...................... $219
HC-400L tuner, 160-10m, 4pos sw................ $379
HC-2000 2kW, dual meters, 4pos sw............... POA

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### AMATEUR BANDS BEACONS

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<th>CALL SIGN</th>
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<td>51.020</td>
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<td>53.013</td>
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<td>53.160</td>
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<td>53.200</td>
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**VHF UHF — an expanding world**

Eric Jamieson VK5LP  
1 Quinns Road, Forreston, SA 5233

Congratulations to those who were around to complete the contacts — it shows you still need to be vigilant and around at the right time. Colin VK5RO mentioned it was necessary to move the antenna around to the various VK States for contacts to be made as there were so many stations on that strong signals were necessary to be heard! This opening over such a wide area, even greater than at the end of December, adds the cream to the icing on the cake for Es operation this year and it may not be finished yet, it is still only the middle of January as I write these notes, so who knows what may happen in the next few days.

For several years now I have been advising operators to be ready for greatly increased Es during the low part of the cycle (1985 and 1986) and exhorting them to watch out for two metre contacts. I now feel my words have not been wasted, the results speak for themselves. It has been a truly remarkable Es season and will be a great fillip to keeping VHF alive. It shows there are still plenty of people around prepared and able to work two metres SSB when the occasion merits, despite the inroads made into the usage of the two metre band by FM and the repeaters.

I wish to thank Trevor VK5NC, Colin VK5DK, Brian VK2AKU, Joe VK7IYG and Peter VK8ZLX who have been kind enough to send me copies of their logs for the period around 1st December 1985 to 7th January 1986 which has enabled me to do several things which could be of interest to VK7 and VK8 from VK5, mainly from Mount Gambier, but that is still VK5! Six States on two metres and being heard in New Zealand as well in one day. Hardly believable. Contacts have extended from Townsville to Tennant Creek in VK8; Alice Springs was heard in VK6; down through VK5 to Adelaide and Mount Gambier; all through Victoria; down to Tasmania (who also worked VK on two); up through New South Wales and back into Queensland. More than half of Australia being involved in the one day. In addition, VK2 at least, plus ZLs worked a string of FK stations in New Caledonia on two metres, most of whom were only 10 watt mobiles.

As I write these notes at night on 15th January, two metres opened again over much of the eastern half of Australia around 0730, with stations being heard (and some worked) from VK 1; 2; 3; 4; 5; 8... and ZL3 VK5s ZDR; RO; ZBU; ZWP and AEI at least worked Brian ZL1BHX around 0800 to 0825 when the band closed. I was having my evening meal! I believe the last recorded contact on two metres between VK5 and ZL was the one establishing the record for VK5 between VK5BC and ZL2HP on 23rd December 1985, a distance of 3149km. Unless there are other VK5s further out who worked ZL then the distance record may well shift to VK5ZWP at Warnadale which is one of the suburbs of Adelaide.

This map indicates the spread of two metre contacts during late-December 1985, between Australia, New Zealand and New Caledonia. To stop crossing lines into New Zealand all contacts have been indicated to a central point, which could mean any one of the four ZL call areas. The dots around the Australian coast-line, starting from North Queensland and going clockwise are for Cairns, Townsville, Rockhampton, Mackay, Brisbane, Byron Bay (blank), just Inland is Narrabri, Taree, Sydney, Canberra, Melbourne, Mount Gambier, Adelaide, Port Pirie, Esperance and Albany (blank), Perth, Carnarvon and Darwin at the top. In the centre is Alice Springs and above that Tennant Creek. Longreach is in Central Queensland and Springsure/EmERALD is further west. Towards Rockhampton. The dotted lines indicate signals heard but not worked. Tasmanina shows Burnie in the west. To the south, the data is towards the bottom. Noumea (New Caledonia) is the island in the Pacific with lines drawn to it.

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readers. In conjunction with my own log I have been able to establish the following:

**ON SIX METRES:** From the six logs I have there have been at least 402 separate call signs from VK1 to VK8. VK1 to VK3 were worked on 14/12, VK3 to VK4 on 29/12, VK4 to VK5 on 5/12, VK5 to VK6 on 7/12, VK6 to VK7 on 22/12, and VK7 to VK8 on 28/12. VK8 to VK1 was worked on 17/12, VK1 to VK2 on 26/12, unlike previous years, VK1 to VK4, VK4 to VK5, VK5 to VK6, VK6 to VK7, and VK7 to VK8 will be worked in 1986.

**ON TWO METRES:** There are 168 call signs for this band, comprising three in VK1, 26 in VK2, 87 in VK3, 24 in VK4, 26 in VK5, three in VK6, nine in VK7 and 17 in VK8. In VK2, VK3, and VK4, there were 218 full calls, 128 limited calls and 56 K or combined calls. VK8 to VK1 was worked on 17/12, VK1 to VK2 on 26/12. VK2 to VK4, VK4 to VK5, VK5 to VK6, VK6 to VK7, and VK7 to VK8 will be worked in 1986.

Of course everyone knows there are a lot more stations around who had plenty of contacts on both bands. VK1 to VK3, VK4 to VK5, VK5 to VK6, and VK6 to VK7 worked on 17/12. VK3 to VK4 was worked on 26/12. VK1 to VK2 worked on 26/12, and on 5/1 he worked a further 5x9. VK5 to VK6 worked on 16/12 and this probably whetted the appetite of the VK8s. VK7 to VK8 worked on 5/12 on two metres which they considered to be such as I saw them or were passed on to me by others. My note book runs to more than 15 pages!

In the beginning of December, Ron YJ8RG put in an appearance and he was to feature in many contacts. Also, VK9ZB on Willis Island became known and on 4/1 ZL2TPY worked VK2 and VK4 and on 16/12 VK9ZB, VK2RSY, VK2RGB, VK2HRV, VK4RTL, VK7RST, VK7RNT, and a couple of ZL beacons, all on six metres. VK2RSY worked VK4, VK5, VK6, VK7, and VK8 on two and VK5 to VK12 on two. VK2RSY also worked on 17/12, 21/12, and 22/12 on two metres. VK2RSY and VK12 were working on 18/12 and 19/12.

**HIGHLIGHTS AND HAPPENINGS**

I do not propose to give a blow by blow description of what has gone on during the six weeks, to the middle of January, all those operating on six metres will be well aware of the widespread openings on both six and two metres, and for every contact which may be mentioned, there will be tens equally, if not more, equally good ones. Instead of masses of calls which are not of interest here, I would like to describe a few important events as I saw them or were passed on to me by others. My note book runs to more than 15 pages!

On 8/12, VK4ALM carried a report that ZLBOY had already been heard in FK8 at 2230 UTC. We also learned that V1B2ZB would be GRT on 6/12. Ron VK7KD reported working VK8ZWH 5x8 at 0436, and a report from VK4KL that the group of people around him, VK4LE, VK4AQG and VK4LC all worked on 144 MHz, and that ZL8 and VK12s around 0340 then VK2. ZL2s were now working FK8 frequently on six. Initial fishing vessels down as low as 52.250MHz and interfering with the ZL beacons. A report from P29BH that ZL2 was heard on 144.100 around 2300 working VK5DKD. 24/12 was a bit quiet except for VK9C, ZL7TBN, VK6EE, then VK2 and 24/12 Christmas Day and I had to be content with VK5LP, VK5NC and VK5J in Menegi, 100 km south east of Adelaide, but noted VK9LC was in again as ZL2, 1 and 3.

25/12 — Set-up camp at Menegi on top of a good rise and what a great place it was with power line noise, motor cars, etc. Now within range of VK3 for more 144 and 432MHz contacts. On six VK2, 3, 4, 5 and ZL2 were worked. P29GPL Beacon heard on 30/12, and I was able to check the frequency. ZL to VK4 on two.

Felt sure that 27/12 was going to be a good day, ZL to VK1, VK2, VK3, VK4, VK5, VK6, VK7 and VK8 on 144 MHz, and VK1 to VK8 on two. VK7NC at 0100, VK3DKJ working VK2 and VK4 on two metres. A VK4 reported ZL had been heard in SW1. ZL1BX to VK4GC and VK4AZ on two, VK2KAY at 0000, FK8EM on two, VK2KAV at 0220, VK4LC on two, VK5BD on two, VK5ZC on two, VK5ZM on two, VK8TM the first VK7. Noted VK9LC was in again as ZL2, 1 and 3.

28/12 — Weather quite wet and miserable, so power line noise, motor cars, etc. Now within range of VK3 for more 144 and 432MHz contacts. On six VK2, 3, 4, 5 and ZL2 were worked. P29GPL Beacon heard on 30/12, and I was able to check the frequency. ZL to VK4 on two.

29/12 — Very wet and miserable. On 144 MHz, VK5NC worked VK2BP and VK4HGJ on two, VK5NC worked VK7 on two. Around 0330, the VK2 band started off with VK2QF and VK2QG, then VK4LX, and ZL2s were worked, VK2, 4, 5, 6, 7, ZL1 and ZL4, all on six metres. On two metres the VK5LP log book contains 25 contacts 25/12, 15/12, 17/12, and 19/12. VK1 to VK3 were worked on two, VK4, VK5, VK6, and VK8, and VK6 on 29/12. VK7 had heard 3V9 and 5V8, but had heard VK4 for one-way only. VK8 also heard VK9BOY 5x8, then VK11 then VK7NC at 0100. VK3DKJ working VK2 and VK4 on two metres. A VK4 reported ZL had been heard in SW1. VK11 on 144.100 MHz, then VK2KAV who were followed by VK4LC at 0100. VK3DQJ working VK2 and VK4 on two metres. VK2KAV at 0220, VK4LC on two, VK5BD on two, VK5ZM on two, VK8TM the first VK7. Nice to be friends, isn't it? VK4LC reported working VK2 and VK4 on two metres to VK1 and VK2 on 144 MHz.

30/12 — After such an incredible day yesterday, today must be quiet, but what if it be? At 2335 there was VK9LC at 5x9. Then VK8KXX 5x9. He said yesterday was not a very good day. VK11 on 144.100 MHz, then VK2KAV on 29/12, then VK8KXX 5x9. He said yesterday was not a very good day. VK2KAV on 29/12, then VK8KXX 5x9. He said yesterday was not a very good day.
The FM hand-held read the stations to 5x9 at 0000 UTC. Gordon VK4WF, running two watts to a two element beam was 5x9 here at 0523. JY8HGK in also. Report from VK6HK that a Perth SWL had received news from Japan, per courtesy of P29PL and VK60X. 31/12 and a little quieter today, but VK8G6, VK7KT and VK9KT in all around 0130 at 5x9. At 0230, ZLS started with ZL2TPY 5x9. Then over to ZL45OK, 5x9 at 0312, followed by VK7RST at 0254. Then worked my old friends Lance VK4AZ at 0344 and Hughes VK5CSB at Berrie at 0446. More VK4s and 4s leading up to VK8HT at 0515, 5x9 on two metres. Then VK8OX at Carnarvon, you can’t get much farther than that across Australia. JY8HR in again, more ZLs. VK8ZCU at Tennant Creek tried two metres at 0515, to no avail. Nevertheless, VK7JG reported on 27/12 he had a ball on two metres by working six VKs and six VK4s. Also reported he would be going to Norfolk Island for a few days from 29th January, 1986 and would have six metres mobile. VK5KUG travelling across the Nullarbor from Perth was hearing Melbourne FM on a 3/4 wave whip on his hand-held. Andrew VK9GAJ and others were entrenched on Mount Williams with 144, 432, 1296 FM and CW, 2304 and 3456MHz CW and would be trying to extend the present record on 3.5GHz.

As per previous reports (1st January 1985), VK5SL is still portable at Meningie and loath to leave such a good site! VK4FX in at 0019, then VK7RL at 0042, two metres to VK8ZC and some VK8ZC at 0047, 5x9, 5x6 and 432. VK2KX at 0056, 5x9, 5x5 and 3x9, more VK8s. Had more than 40 contacts today, many of them on 144 and 432MHz to VK3. The 2/1 with VK5LP packing up to go home after a wonderful day, sensible, VK2AKU worked VK4ABP at Longreach at 0750, followed a few minutes later by VK8BXL, VK8KM and VK2JW at 0830 and VK2BKL at 0834. VK4UAR, VK4TN, VK2DDG, VK4AGQ, VK2KAY plus eight VK3s, all on two metres starting at 0820. 3/1 and 4/1 — usual VK2s and 4s plus a few more VK3s. VK8BXL and VKBZMA and VK8LXL, never a day without 488s.

5/1 — started off with VK8ZCU and VK8BXL around 0130, VK7ZIF at 0211, VK1 and VK1 at 0251, VK1 and VK1 at 0254. VK4KX and VK5KUJ and VK5MVJ were both rather pleased to work Neil VK8ZCU on two metres, being their first VK8s. They had missed the previous openings and they did not think the only two stations Neil actually worked on two metres for the season. The day started with VK8s again, then VK7JG at 0930, a long short skip opening to VK3 with a dozen or so stations. VK7JG was working four VK8s between 1100 and 1113, VK5NC was 5x9 on two and 5x5 on 432 and VK5SDK was 5x8 on 432MHz. At 1151, VK8LXL was still in. Jim VK3AZY working townsville on two while Gill VK3KHAU had to be content working Rockhampton on two. ZL2TPY reported more than 800 S0Os on six and two metres and had worked VK1, 3, 4 and 4 on two. VK1 was working quite well. VK1DZ on 12/12 day from 0400 to 0600. FK8s were hearing weak JA signals on both 50 and 52MHz. ZL80Y heard were very strong on six, and there were many ZL1BHX, around 0800. At the same time, VK7s were working FK5s during the morning. On 5/1, VK8TM, all on two metres. VK5DK worked five minutes later by VK8ZLX, VK8KTM and VK2ZJG. VK3AMK at 0042, two metres to VK5NC and some VK8, 4 and 2, plus some VK3s, all on two metres starting at 0029. VK8ZU at 0044, 5x9 on 50MHz. VK7SM and VK7T who were so strong that this led the VK9s to try two metres to them with the results reported earlier when five stations worked VK9s. VK7SM and 5x8 reported on 50MHz. ZLS were very strong on six, and there were many VK3s on short skip to S9+. "The most significant MUF" ZLS continued to be around until after 1200 UTC. VK8GF was very strong from VK9 on that same day. VK5RO also reported FK8 and JY8 this day.

More skip on short six to VK8S on 15/1 but no two metres. VK7JG 15/2 (Lionel VK3NM on holidays) 5x9 at 1009, then many more VK3s at 5x9. Les VK3ZJ reported 8050 points scored for the Ross Hull Contest, and went on to say, possibly with tongue-in-cheek though, that on 1/1, during the big opening strong to VK8ZCU, Neil mentioned he had worked VK5 and VK7, and Steve VK9 also had similar equipment, he suggested a contact be attempted, which they did but with no results! Les said at least this was probably the first attempt on 10GHz between the two countries. VK8MT at 0946 UTC, 5x9 on 10GHz! VK3YTT worked ZL1BH on FM on 52.015 at 0930. Four stations on from Alice Springs.

In the midst of this part of the epistle maybe it is a bit long, but it could have been much longer, 15 pages of notes condensed into two or three columns. I know there will have been many unreported contacts, but the VK3s and VK8s are still up on the other side, VK5KUG eventually surfaced, but I cannot be everywhere at once and unless I listen all the time and make many more telephone calls and do no operating, then some points will be missed, but overall the above does give a general portrayal of what happened on six and two metres during the Es season of 1985/86, a truly outstanding year and one which will take some beating. But I see no reason not to predict that it will be somewhat similar for the 1986 season, as we will still be in the low part of the cycle.

One last item to hand, Col VK5RO on 14/1, following the ZL contact on two metres was involved on six metres in a round-table with ZL80Y, VK8GF and VK8JY. The contact was on 0930, when another station signing W1-25 broke in and added some comments! He left soon after without really establishing who he was, but as they were all on FM Col wondered if he was a CBer trying his hand at six metres!

**CERTIFICATES**

Following all the happenings on two metres during the past month, it seems very likely there will be quite a few people now having Worked All States on two metres, so the Awards Manager could be busy for some years. A number of years ago following his wanderings around Queensland when he worked a number of areas. Col VK5RO got number two by hand-delivering the certificate to VK1 at Deception Island, 5x4 out and 5x6 in. On 30/12, VK9LC at 2326 and on 1/1 VK9LM at 0211.

Peter also mentioned the 1st January was a day of interest. Some VK8s had managed a couple of metres between Phil VK6ZKGO and VK5ZAR, 5x5 both ways on 144.100MHz at 0341. Later in the day, the band opened on six to VK8, northern VK and P29QA.

In view of that there is some relaxation of the rules in regard to the use of 50MHz now that Channel 0 in Melbourne and Sydney have gone, Peter advocates greater usage of the 50MHz end of the band. This maybe in view of some parts of the world but confining to the standards and frequencies already in use by other areas. I am in general agreement with this, but would rather defer comment until something definite appears on the books. In the meantime, the other relevant points he has raised on this matter have been filed away until the appropriate time.

**WESTERN AUSTRALIA**

Peter VK6KXW, sent a short report on his six metre activity and how much interest there had been. On 17/12 worked three ZLs, 5 ZLs and two ZL3s between 0549 and 0739. On 24/12 worked two ZLs, five ZLs, three ZL3s, between 0700 and 1000 UTC. VK8TM at 0800. VK8GF worked eight ZLs with signals to S9+ and on 16/12 worked seven in ZL1 and one ZL3. Time for all these contacts between 0600 and 0700.

Peter reports his OTH, at Eagle Heights is 60m (2000 feet) ASL, with a clear take-off in all directions and in particular to New Zealand. This result in the slightly embarrassing position of having to go through 50MHz to contact VK9BGL and VK5X in NZ on 144.100MHz (Personally I think it is an embarrassment I could well stand... 5LP)!

Bill operates regularly on OSCAR-10 and the best place to contact him is via ZL80Y at VK7. He will then have the best chance to contact you on 40MHz. He has also just received his WAC for SSB on OSCAR-10. The antenna system on 144 is by four 19 element Yagis and on 23cm, two element Yagis, 5m (20 feet). Equipment is an IC-271H and 471H with pre-amps, but no linear.

Bill also notes that there is some relaxation of the rules in regard to the use of 50MHz now that Channel 1 in Melbourne and Sydney have gone. Bill advocates greater usage of the 50MHz end of the band. This maybe in view of some parts of the world but confining to the standards and frequencies already in use by other areas. I am in general agreement with this, but would rather defer comment until something definite appears on the books. In the meantime, the other relevant points he has raised on this matter have been filed away until the appropriate time.
How's DX?

DX in the doldrums? No it is still there if one cares to listen and call at frequent intervals on even 10 metres, but it is essential to call and establish a contact, from thereon-in it is like a mini-DXpedition if one's timing is correct.

This column would be interested in running a segment entitled 'My most unusual QSO'. We have all had some unusual, humourous and, although we may not admit it, rather embarrassing QSOs from time to time, so why not share your most unusual one with the readers of this column?

The conditions are simple, entries must be authentic and actual QSOs that have occurred to the writer during his or her amateur career but keep it to about 200 words. How about it ladies and gentlemen? Whether it happened half a century ago or last week, do not keep it secret any longer!

Selected entries will be published when space permits.

GRENADA

A vacation DXpedition was to be taken by Bill K4LTA, and other amateurs and their families from the middle of last month until the 5th of this month. At the time of writing they hoped to acquire the call J38A, but as their hopes may not have come to fruition you may have to look for their home calls J3. You might even hear them signing J34LTA.

The calls of the participating operators, other than Bill are; N4FKC, WA6FSX, N4MMV, N5SZ, K0OSSN, N4KOV, W5PWG and N6LHN.

SAO TOME

Luiz S92LB, is still quite active but with poor propagation to amateur stations in the eastern states, his signals are swamped by QRM.

One VK in the western state of this vast country, didn't believe his luck when he worked Sal S90AS, a visitor to this much wanted country. Sal's home call is J9AZS, and he was visiting en route to Togo and Benin on business in January. Sal hoped to obtain operating privileges in these countries. For all operations QSL to the home call.

ETHIOPIA AND DJIBOUTI

An operation from ST and JS is hopefully planned by Jacque WALZJ in the near future. Unfortunately, I feel that it would be very risky and may not eventuate due to the present problems in this area.

ANOTHER ISLAND — ANOTHER COUNTRY?

According to the media, a small island has emerged near Iwo Jima in the Pacific Ocean. A Japanese Maritime Service-Force ship, the TAKUYA confirmed that it had appeared and was blasting rocks high into the sky. It appears to be about 700 metres long and 200 to 300 metres wide, having a height of about 15 metres. If there are any volunteers to operate from this area, if and when it cools down, will it pass the ARRL DXCC criteria for a new country?

PETER 1 ISLAND AGAIN

Bob KD7R states that he is making plans to operate from this one late in the year, whilst en route to the Antarctic. He is seeking landing permission and other necessary documentation. It comes off he will be travelling south with the Coast Guard.

It is a long way off, but all DXers hope that Bob will be successful in his endeavours.

THE 'GLOBETROTTERS' COLVIN'S STORY

Iris, Lloyd and gang made some 5,000 contacts to 137 different countries from Lesotho. Next they were moving on to the Kingdom of Swaziland where they hoped to gain visas and operating permission to visit Mozambique.

They have been very successful in the use of satellites and have had 400 QSOs with 40 different countries.

Ed AH2BE, ex KB6DAW/KH2/KH9.

Those who worked Ed and have not requested a card should do so promptly, as he will be tripping off to visit his father-in-law 8P6JQ, and hopes to get an 8P9 call allocated to him during his visit. He will then move on to a long posting in HL land, where he has requested the call HL5MM.

Good luck Ed, an enjoyable holiday and good DXing in the future. . . (VK3AH)

News From Guam

Ed, formerly KB6DAW/KH2, is now sporting the call, AH2BE. Ed has written about his trip to Wake Island during October last year, in which he made 2,600 contacts to 122 countries, all of the US states and 36 Zones in seven days of operating. Not a bad effort Ed, considering your long call sign and the poor propagation into Europe.

Ed’s trip coincided with the 50th Anniversary of the first China Clipper flights from USA to the Far East and amateur radio in the area, so there were many celebrations to attend.

Ed flew in on a military aircraft and after being met by the Communications Officer and a representative of the station Commander, was taken to his room where he changed out of uniform and was on-air within an hour. His first contact was HCE8. The equipment varied but was mainly a FT-101B, lent by KC6RM, and a TS-830S which had some receiver problems. In all it was a lot of fun and Ed hopes to do it again this year.

He notes his gratitude to a number of people and organisations for donations and assistance including amateurs P29JS, AH9AC, WH9AAD, NK6T, KC9RM and the military personnel on the base for their help and consideration.

AMATEURS HONOURED

Dave W6AQ, a keen DXer, was honoured in last year's Emmy Awards. Dave’s production of “Do You Remember Love”, a television-movie about a lady suffering from Alzheimer’s disease, was nominated and won! Congratulations Dave.

Other amateurs were also mentioned in the same Emmy Awards. The Los Angeles television station, KTTV, took four coveted awards for its daily newscast. The station, thrilled by such a scoop, took a two page advertisement in Variety, (an industry daily newspaper) and publically thanked all the contributors to their success.

Amongst those mentioned were Mert N6AWE, Dave N6DKI, Bert WB6MQS, Don WB7ADU, Howard WAGUFM, Bill WASTF, Charles WB6SKM and Sudock WB6GDF. Amateurs have many talents, some yet untapped and truly one never knows who the person is on the other end of the QSO.

DIFFICULTIES!

One OT writing to me on a different subject states that when he built his QTH a quarter of a century ago, he had problems getting the power and water connected, now he is surrounded by 33KV lines, without mentioning the 415 and 240 volt feeders and associated transformers. To add to his QRM generators outside his QTH, a number of two and three storey homes have been built in close proximity. As if the RF attenuation caused by these is not enough, he is confronted with burglar alarms being installed on these premises which are connected with many metres of unshielded wire. These act as excellent antennas and a little
RF from the amateur frequencies actuate them nicely.

This gentleman still operates quite happily on mainly CW and puts his problems down to progress!

The story reminds me of another amateur who recently vacated his QTH with all modern conveniences to move to an area in the 'never never'. The new location will allow him and his family to commute daily to their business and school commitments. To get electricity connected, the cost was to be in the vicinity of $100 000, which he was not too happy about so now he is installing Solar cells to do the job of the running of the house and of course the transceiver. No power or water, but also no smog or QRM and a long way to go for us to go to have our dog clipped!

TURKEY

A number of amateurs seem to be quite active from this area and it appears that QSLs are being returned quite promptly.

One of the more active TAs is Aziz TA1E, pictured with his FT707 which runs into a commute daily to their business and school progress! Returned quite promptly.

It is interesting to note that Mike VK6HD's score of 5 383 on the 160 metre band in 1983 still stands as the highest score for Oceania. Thanks to all who participated in flying the VK flag.

It is also nice to see the calls of VK9NS, VK6HD and VK9CI who have achieved their Five Band Worked All Zones accreditation which is by no means an easy certificate to win. Congratulations on your tenacity in this achievement.

PROGRESSION

Lee KH6ZF, in his weekly publication KH6ZF REPORTS, gives the predicted smoothed monthly Sunspot values until June this year. The first figure is for the USA and DX, the second is the SIDC adjusted value: January = 10/0; February = 9/0; March = 8/0; April = 7/0; May = 6/0 and June = 5/0.

Not good news really, but there is good DX about. Lee finishes his weekly report by quoting: 'Ever notice — No matter what the results, there is always someone eager to misinterpret it.' How true Lee.

BANDS AND PIECES

Watch for FR7AI on Tromelin Island this month, used to celebrate the 37th Independence Day of the island with this facility, he should not be too hard to track down.

As from 1st January, the ARRL DXCC Entity List is being revised to include the 37th Independence Day of the island. The newer frequencies that have been allocated to the island will advance dramatically in this country in the next decade.

TOKYO

TOKYO

The story reminds me of another amateur who used to celebrate the 37th Independence Day of India with this facility, he should not be too hard to track down.

As from 1st January, the ARRL DXCC Entity List is being revised to include the 37th Independence Day of India.

TOKYO

The newer frequencies that have been allocated to the island will advance dramatically in this country in the next decade.

Cardiff for TV6LEO, the station commemorating the Lion and the Golden Forum in the BBC should be sent to F8Q0. ** Did you work CPYU and never received an answer? He is now PT2AZ and still has the logs.

Tom Christian V861C, now has the task too, which is quite a task, as VKs 2HD, 2O0G, and EA6 will use ZF9. ** VE2EZ states that ICs are not recognised by the postal authorities in Anguilla. I'll bet 'green stamps' are though! ** Gerry SX5GK, is a Russian am and the 'green stamps' are still being used as well as being a medico. His wife is a teacher. ** Albania has an amateur radio system, but not on allocated IARU frequencies. It may not be long before we can expect legitimate operations, but it will take time similar to BY. ** RA4AHA helps conduct an OARL Net around 14.180MHz generally at 1800UTC. ** The station YE3C, was being used to commemorate 40 years of Army communications in Indonesia.

THANKS

Sincere thanks are extended to the following: The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, BARG, CO-QSO, DX FAMILY FOUNDATION NEWSLETTER and JAY GIBBENS MAYBE RALLY LIST. KH6ZF REPORTS, LONG ISLAND DX BULLETIN, ORK DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER. Magazines include BREAK IN, cqdx, ELECTRON, JA-QO, JARL NEWS, KARL NEWS, OLD MAN, OPP COREM, THE SHORT WAVE MAGAZINE, VERON and WORLD RADIO.

Members who have contributed include VKs 2HD, PS, EBX, 3XOA, YL, DL6S, HK0D and GH8B. Overseas amateurs include AHZ2E, GIEO, HI5C, K4BDAW/KH2, OK6YU, QTHWW/RE2G and T14AMM. Thanks to one and all who make this column possible.

AR

One number of active TAs is Aziz TA1E, pictured with his FT707 which runs into a dipole.

ON ANOTHER BAND

Well known DXer Steve W6KDK, pictured using two metres whilst out shopping in San Francisco.
The Japanese Government is investigating the communications. Union were already studying the potential of unrealistic, but they added that the US and Soviet provide new forms of commercial at whether mental telepathy and ESP could possible use of psychic power in cards.

QOCIC, HB9AVW, OH4RR, OK2BVX, ON4AAC and YU7ZZ. 9N1RNK, BV2DA, DF4MV, DL7MAL, F6EXC, GOBNA, P29s, DN, KPD, YC4FRX, ZK1DD, ZLs 1BAQ, 2AIS, 3AGQ and 3D2DW, FK8EJ, JH2KKW, VKs 4ALV, 5AAX, 7W, 8X=, 9LM, L240KTS, SV1NAQ, VK75A, YI18G0 and 27 USSR SWL Included ones from 9M2FZ, 9Y4GR, BY5RA, HG19HB, KL7NT, YS1RRO, DJ9ZB, ZMOZOU, PA0LOU, ZMOZZZ, K1ZZ.

Everyone knew what it was all about on both the 'This special announced it was his fifth VI prefix contact. Steve worked proudly of its special significance. One YU that Steve worked proudly

The Remembrance Day Contest results as listed in February Amateur Radio are incorrect. The Federal Contest Manager, apologises to all contestants who have been embassayed by the error. The correct result listing will be published next month.

Interesting cards received by VK2PS.

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**RD RESULTS INCORRECT**

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**1985 ALARA CONTEST RESULTS**

<table>
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<tr>
<th>Call Sign</th>
<th>Poin-Comments/Certificate</th>
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<td>VK4NUN</td>
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</tr>
<tr>
<td>VK85J</td>
<td>150</td>
</tr>
<tr>
<td>VK8AWN</td>
<td>134</td>
</tr>
<tr>
<td>VK2PXS</td>
<td>128</td>
</tr>
<tr>
<td>VE7YL</td>
<td>126 VE ALARA Member</td>
</tr>
<tr>
<td>VK3FX</td>
<td>125</td>
</tr>
<tr>
<td>VK4BRZ</td>
<td>110</td>
</tr>
<tr>
<td>ZL2QY</td>
<td>110ZL ALARA Member</td>
</tr>
<tr>
<td>VK3DR</td>
<td>105</td>
</tr>
<tr>
<td>VK3JR</td>
<td>92 YL Non-Member</td>
</tr>
<tr>
<td>VK3KB</td>
<td>90</td>
</tr>
<tr>
<td>VK2BBR</td>
<td>89</td>
</tr>
<tr>
<td>VK2AQF</td>
<td>75</td>
</tr>
<tr>
<td>VK2D0J</td>
<td>70</td>
</tr>
</tbody>
</table>

Check logs were received from VKs 2K1S and 4ATK.

---

**Psychic Spectrum Investigation**

The Japanese Government is investigating the possible use of psychic power in telecommunication. An advisory committee has been set up by the Minister of Posts and Telecommunications to look at whether mental telepathy and ESP could provide new forms of commercial communications. Japanese officials admitted the project seemed unrealistic, but they added that the US and Soviet Union were already studying the potential of psychic powers.

**NEW MEMBERS**

A warm welcome to Win ZL1BBN, who joined on 28th December 1985, and was sponsored by Joan.
The Amateur Service is a secondary service on the 1240-1300MHz band, the primary allocation being for Radio Location. Further, the segment 1260-1270MHz was reserved at WARC 79 for Satellite Communications. Experiments have shown that it is desirable to leave a segment 5MHz wide on either side of the operating frequency of a RADAR installation. Taking into account all of these factors, an FM repeater split of 12MHz has been specified.

**BAND SEGMENT USAGE**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1240.0-1241.0</td>
<td>FM Relays and Links</td>
</tr>
<tr>
<td>1241.0-1243.0</td>
<td>FM Repeater Inputs</td>
</tr>
<tr>
<td>1243.0-1252.0</td>
<td>ATV Channel 1, sound 1251.750; vision 1246.250</td>
</tr>
<tr>
<td>1252.0-1253.0</td>
<td>FM Simplex</td>
</tr>
<tr>
<td>1253.0-1255.0</td>
<td>FM Repeater Outputs</td>
</tr>
<tr>
<td>1255.0-1256.0</td>
<td>FM Relays and Links</td>
</tr>
<tr>
<td>1256.0-1257.0</td>
<td>In-Band and Cross-Band Linear Transponder</td>
</tr>
<tr>
<td>1257.0-1260.0</td>
<td>Digital and Packet Radio</td>
</tr>
<tr>
<td>1260.0-1270.0</td>
<td>Satellite Communication (WARC 79)</td>
</tr>
<tr>
<td>1270.0-1280.0</td>
<td>General Use, except in areas where these frequencies are in use for Radio Location (Note 2)</td>
</tr>
<tr>
<td>1280.0-1293.0</td>
<td>ATV Channel 2, sound 1292.750; vision 1287.250</td>
</tr>
<tr>
<td>1293.0-1295.0</td>
<td>In-Band Linear Transponder</td>
</tr>
<tr>
<td>1295.0-1297.0</td>
<td>Weak Signal Modes, including Beacons (Note 3)</td>
</tr>
<tr>
<td>1297.0-1300.0</td>
<td>General Use, except in areas where these frequencies are in use for Radio Location (Note 2)</td>
</tr>
</tbody>
</table>

**NOTES:**

1. All FM operation uses 25kHz channel spacing.
2. In Australia, some Department of Aviation RADAR's are centred on 1275.000MHz and 1305.000MHz, while some Department of Defence RADAR's are centred on 1300.000MHz.
3. The beacon segment is from 1296.400MHz to 1296.590MHz, with particular frequencies allocated in accordance with the beacon plan.

**RADAR LOCATIONS (As listed in AMFAR)**

<table>
<thead>
<tr>
<th>Call</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>Mount Majura</td>
</tr>
<tr>
<td>VK2</td>
<td>Mascot/The Round Mountain</td>
</tr>
<tr>
<td>VK3</td>
<td>Tullamarine</td>
</tr>
<tr>
<td>VK4</td>
<td>Eagle Farm</td>
</tr>
<tr>
<td>VK5</td>
<td>West Beach</td>
</tr>
<tr>
<td>VK6</td>
<td>South Kalamunda</td>
</tr>
</tbody>
</table>

- VK2 Williamstown
- VK4 Amberley & Townsville
- VK6 Pearce
- VK8 Darwin
- VK2 Mascot
- VK3 Tullamarine
- VK5 Salisbury

**FM REPEATER OUTPUT FREQUENCIES AND RECOMMENDED USAGE**

**OUTPUT:** 1253.025-1255.000MHz at 25kHz.
**INPUT:** 1241.025-1243.000MHz (12MHz split).

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1253.050</td>
<td>RTTY</td>
</tr>
<tr>
<td>1253.100</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.150</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.200</td>
<td>Data</td>
</tr>
<tr>
<td>1253.250</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.300</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.350</td>
<td>Data</td>
</tr>
<tr>
<td>1253.400</td>
<td>Mobile Voice Secondary</td>
</tr>
<tr>
<td>1253.500</td>
<td>Mobile Voice Primary</td>
</tr>
<tr>
<td>1253.600</td>
<td>Mobile Voice Secondary</td>
</tr>
<tr>
<td>1253.700</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.800</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.850</td>
<td>ATV Liaison</td>
</tr>
<tr>
<td>1253.900</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1253.950</td>
<td>ATV Liaison</td>
</tr>
<tr>
<td>1254.000</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.100</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.150</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.200</td>
<td>RTTY</td>
</tr>
<tr>
<td>1254.250</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.300</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.350</td>
<td>Data</td>
</tr>
<tr>
<td>1254.400</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.450</td>
<td>Data</td>
</tr>
<tr>
<td>1254.500</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.600</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.700</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.800</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1254.900</td>
<td>Mobile Voice</td>
</tr>
<tr>
<td>1255.000</td>
<td>Mobile Voice</td>
</tr>
</tbody>
</table>

The above Band Plan was prepared after a detailed examination of the effects of transmission from amateur equipment on the Melbourne RADAR Installations. Accordingly, FTAC is proposing a 12MHz split for 23cm repeater operation.
LISTENING AROUND

I think it may have been the custom during wartime for the Americans to name some of their ships after famous people in American history. Be that as it may, the troopship that was taking us through the Coral Sea to an unknown destination was the FREDERICK C AINSWORTH, and I have no idea how they arrived at this name. We got along well with the Americans aboard, their food was first class, although the bunks left a little to be desired.

BARBERS DID A GOOD TRADE

We rounded New Guinea somewhere in the Milne Bay area, continued through the Solomon Sea, and went up by Finschafen. Being well into the Tropics, the Army Barbers did a roaring trade with their six-penny (approx five cents) haircuts.

The ship continued upwards, hugging the coast of New Guinea, and onward through the Bismark Sea. We were heading roughly west, although we still didn’t know where we were destined.

THE "FURPHIES" FLEW

Finally, at about 4pm on a hot Sunday afternoon, we dropped anchor of the coast of Biak. Around us were a vast number of other ships of various sizes, and "furphies" (rumours) spread rapidly that this was where we were to be off-loaded. I looked across the water to the island and went up by Finschafen. Being well into the Tropics, the Army Barbers did a roaring trade with their six-penny (approx five cents) haircuts.

The ship continued upwards, hugging the coast of New Guinea, and onward through the Bismark Sea. We were heading roughly west, although we still didn’t know where we were destined.

NO SECRETS

Immediatly, we let our fellow soldiers know the contents of the message.

Precisely on the dot of 5pm all the ships began pulling up their anchors and a convoy of 18-20 ships began moving in a westerly direction — a sight I shall never forget.

We continued on a westerly tack for about two days, through the Halmahera Sea, then headed north. Finally, early one morning, after crossing the Equator, we dropped anchor within sight of yet another tropical island. This was our destination — Morotai Island, located two degrees 20 minutes north, 128 degrees 25 minutes east. Our arrival was marked by a significant event in world history.

We had eaten breakfast and were lying on our bunks with full packs ready, awaiting orders over the loudspeaker for us to disembark. Eventually the speakers crackled to life to announce the death of President Roosevelt. That was all. There was then absolute silence throughout the ship as we did not even know that the American President had been ill. When we had recovered our composure we offered our condolences to the Americans.

FROM SHIP TO BOAT

Finally, we received our orders for disembarkation. A number of small flat-bottomed boats — they looked similar to the Putney to Mortlake punt — were tarped up by Finschafen. Being well into the Tropics, the Army Barbers did a roaring trade with their six-penny (approx five cents) haircuts.

...
GETTING YOUR SPEED UP

The column this month repeats a topic used about two years ago. If it sounds familiar, bear with me. In my early days, 20 WPM was my goal; but now I've had it for some years and I notice that I can start with getting from five words-per-minute to 10, or more, and conclude with the rarified atmosphere of the 40 WPM operators. How did they get there before?

The best way to learn is to do; the best way to increase your CW copying ability is to copy, off air. The WIA sponsors slow CW broadcasts every Wednesday at 2200 UTC, the details of which can be found in QST. Once you have started, and if you can get your speed up to Full Call level — or better yet, you want to get your speed up so you can use CW legally.

If you are among the lucky few who have to pass the five words-per-minute exam, here are four handy hints for getting your speed up to 20 WPM. They may be going way too fast for you, but if you concentrate on identifying the odd character, you will soon find that you are getting to the point where you are picking them up first time. And the last hint! - throw the microphone away. Well, not literally, but why not unplug it for a while?

When I was trying to get up to speed I made a solemn vow that I would not engage in a phone QSO until after I had made a CW contact. Even now how many times do you find yourself touching the microphone. To get your speed up you need practice, and to keep at it you will need the right sort of incentive, and something to help you with your copying. With a mechanical auto-key, you can do this, but it varies from person to person. You can only improve your copying, which alt of you remember from your first attempts at teaming the code, is called 'character recognition'. With copying, which is character recognition, there is no process of identifying words (as opposed to characters), and you will continue to copy while a new one occurs, you will continue to copy while the received signal has been recognised, an order goes back to the right side of the brain so the hand can write the phrase. The analogy with foreign language is a little easier to make: if you are learning the foreign language you translate everything as you go, but with copying you can do this, but it varies from person to person, in the range of about eight to about 15 WPM.

If you reach this barrier you cannot improve your speed without going on to the second way of copying, which is character recognition. When you are first learning the language you translate everything as you go, but as you improve your ability you find that you can think in the foreign language without having to translate it. And, as with the code, some people never make the transition from translating to thinking.

Extending the analogy with foreign languages a step further, for years it was thought that a plane could not possibly break the sound barrier, and similarly, many operators get to a speed of around eight to 10 WPM, and are convinced they cannot go any further because there are three ways a person can copy code, and there is a real barrier to get through. The first means of copying, which all of you remember from your first attempts at teaming the code, is called 'character recognition'. In the learning stages, the right side of the brain is listening to the signal while the left side of the brain is comparing the received signal with what it has already learned. If the received signal is recognisable, then you will be able to make the connection with the correct code. The speed at which you can copy 100 percent. If you are studying for an exam, or copying coded traffic, it is right 90 percent of the time, and you have a chance to relax your mind while you are copying.

In the end, you will get to a point where you can listen without transcribing — just make the occasional note. Professional operators are always shown using typewriters, and there is a reason for this — the hand will get tired and give up before the brain does, at around 25 WPM. A good typist can work without thinking about it, at speeds up to 100 WPM, or more. This is the only way to go if you need hard-copy.

Finally, speed should never be an end in itself. Once you get to 40 WPM, or more, what will you do? Mostly people who are slower, right? Right? There will come a day when you realise you are comfortable with the speed you are working — you can strain a bit and get the faster traffic, and relax and enjoy chugging the rag at 20-25 WPM. And you can stop worrying about speed and make your speed a 'fun' percent fun and 10 percent work, instead of the other way around. 73 till next month.

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Pounding Brass
Marshall Emm VK5FSN
Box 369, Adelaide, SA 5001

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Magazine Review
Roy Hartkopf, VK3AOH
34 Toptangi Road, Alphington, Vic 3078

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STATION EQUIPMENT

The following amateur radio equipment has been reported, by the Melbourne office of the ARRL, to have been stolen:

- 1 x 1C7 250 Ser No 36304455
- 1 x 1C2 250 Ser No 17703342

If you are offered one of these items or know of their location please contact Sen Det Ewann McDonald on (03) 329 0000.

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AR

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CQ OCTOBER 1985 — 1984 World-Wide CW DX Results. CQ WW DX Contest All-Time Phone Records. 160 metre DX Contest Rules. Contest Calendar for October and November. Quick Conversion of Phone Numbers. CQ NOVEMBER 1985 — RTTY Special including Packet Radio.

WORLDWIDE DECEMBER 1985 — Humani

RADIO COMMUNICATION JANUARY 1986 — Direct Conversion CW Transceivers. (P) Rotator Speed Controller (P) Index for 1986. AR

CQ TV MAGAZINE No 132 — General Information, News, Circuits, Amplifiers, etc for ATV. 100GHZ Video Beacon.

AR

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**KNOW YOUR SECOND HAND EQUIPMENT**

This month we will look at the early Icom equipment. In actual fact, the Icom name did not come into use until a few years after the company was founded. The original equipment was called Inoue, after the founder of the company.

The first Inoue equipment to arrive in Australia was imported by Syd Clark VK3ASC, and this was the IC-700, an HF transceiver. At this time, Inoue was also building two metre FM equipment. The IC-20 was a model but, although sold in the USA, none were imported into this country.

**INOUE IC-700 TRANSCEIVER**

Introduced to Australia in mid-1969, the IC-700 was a transceiver based on an amateur band receiver covering 3.500 to 29.500MHz in 500kHz segments. VFO calibration was in 1kHz steps and a CW filter was standard equipment. The transmitter section was in a similar sized cabinet, using a pair of 6146s. Apart from the final stages of the transmitter section, everything was solid-state. Frequency control of the transmitter came from the receiver. An AC power supply/speaker unit completed the set up. As I have never had the opportunity to use one of these, I cannot comment on the performance, however, from the specifications, it would seem to have been quite reasonable for the time.

The price for the combined unit was $505. Second-hand value would be around $225, today.

**INOUE IC-20 2 METRE FM TRANSCEIVER**

This unit was first introduced into Australia by the Industrial and Medical Electronic Company of Melbourne, in mid-1971. It was a 12 channel solid-state FM transceiver, with crystal controlled transmit and receive frequencies.

Construction was somewhat different, with several individually shielded modules held into the main chassis frame. Overall size was quite compact and slightly smaller than the Yaesu FT-2FB. Transmitter power output was rated about 10 watts output, with most producing 12-14 watts. Receiver performance was good, and the sensitivity specification was 0.35μV for 20dB quieting.

Price new was $295, with two channels fitted, second-hand value today would be around $85.

Later in its production run the Inoue IC-20 became the Icom IC-20.

**ICOM IC-21**

This two metre FM transceiver was released in early 1974. The IC-21 was a home station version of the IC-20. In addition to the usual IC-20 features, the 21 boasted a built-in AC power supply, receiver offset tuning, a discriminator mixer, limited in frequency ± from nominal, and a self-contained SWR meter. Constructed in a very sturdy table-top cabinet, the IC-21 was an excellent addition to the shack.

New price of the IC-21 was about $275 with the usual tree channels installed. Value today of a second-hand model would be about $125.

**ICOM IC-21A**

The Icom IC-21A was released in late 1974. In actual fact the IC-21 (see above) is a rare piece of equipment. It was soon superseded by the 21A. Identical in appearance to the 21, the 21A was upgraded in several aspects.

Perhaps the most significant difference was the ability to use the matching digital DV-21 external VFO. The DV-21A offered a key pad frequency selection synthesised VFO with digital frequency display. Unfortunately, frequency coverage was limited to 2MHz, 146-148MHz. In its day this was quite a device!

Frequency scanning and memory channels were yet another of its features. However, with all the good features, there was also one problem — reliability. I doubt that there would be many DV-21 VFOs in working order today.

New price of the IC-21A was $285 and the DV-21 — $295. Second-hand value today would be about $135 for the IC-21A. The DV-21 price would depend on whether it still worked — perhaps $50.

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**NEW VIDEO TAKES OFF!**

A new 8mm video with a tape about the size of an audio cassette could replace the current standard 12.65mm (half-inch).

Approximately 120 manufacturers, including all the Japanese, were turning production to 8mm and industry sources say it is only a matter of time before it becomes the world standard.

**NO SHOCKS IN THIS NETWORK**

A Sydney company, Quanta Electronics, has introduced a device which turns mains power outlets into a microcomputer network.

Quanta say their Nectar Ring, a high technology box, links stand-alone machinery into a network without the need to install new cables in an office or factory.

The company say the system is completely safe for users, data and computers.

**MORE IN OCEANIA**

The population of Oceania, a grouping which includes Australia, New Zealand and other smaller Pacific islands, grew by 4.2 percent to 25 million in the June 1985 year.

This compared with a world-wide population growth of 1.7 percent, according to the United Nations.

---

**KNOW YOUR SECOND HAND EQUIPMENT**

There are two sorts of electrons, or is it three? The third group are real live wires so they may be eliminated in this primer.

The main two electrons which this primer is interested in are: Radio Frequency and Audio Frequency electrons, known simply as RF and AF.

Any school student knows electrons tend to travel at various rates of frequency. AF electrons travel slowly enough to be heard — even by older people with feeble hearing. It is true to say that radio and television manufacturers would not be in business today if it were not for this basic fact. RF electrons, the lower end of the frequency scale, are no more than glorified D class electrons who put one over older people, but not so toddlers. Those electrons at the highest end of the scale could be classed as the elite RF electrons and are A1. They are small in character, but intense in number. Their most noticeable problem is one of always getting sunburned.

The middle range RF electrons do the most work and are the most common, being widely used everywhere. They are also the easiest to catch. They gather like starlings on a wire at sundown. There is little sport to be had catching them. Apart from these most interesting facts, all electrons in the RF groups are decidedly superior to the slower AF ones.

This is why current lags voltage and vice-versa!

There are millions of these RF electrons hanging about; just turn on your radio to listen to your favourite program and herds of these smart RF electrons are there — just waiting. Just how do you sort out the ones you want from the zillions that are rounding about?

If you have ever dabbled in farming then the answer is simple. A device like a cattle chute and grid. This device, termed a ‘mixer’, grabs plenty of them, backs them all up, makes them giddy, pushes the selected ones through the grid and shoves the rest down the chutes. Nothing to it really and all so simple. All very basic, so far.

This sample batch has been given a very special RF test. It is a failure. The AF Grid grid. This device, termed a ‘mixer’, grabs plenty of them, backs them all up, makes them giddy, pushes the selected ones through the grid and shoves the rest down the chutes. Nothing to it really and all so simple. All very basic, so far.

This sample batch has been given a very special RF test. It is a failure. The AF Grid test. The RF electrons complain that they have carried the AF electrons for far too long and are reluctant to be pushed into the ground. No matter how long the freeloaders protest, they are conned by the AF Grids.

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AMSAT AUSTRALIA

OSCAR-10 APOGEEs
MARCH 1986

DAY ORBIT U.T.C. APOGEE SATELLITE CO-ORDINATES I--------BEAM HEADINGS--------I
W # # # # M H M I S S

1st March
6b 2844 0553:11 -26 244 274 53 266 65 357 83

2nd March
6b 2845 0512:11 -26 235 281 62 302 73 57 79

3rd March
6b 2846 0431:11 -26 226 293 71 335 79 76 78

4th March
6b 2850 0350:11 -26 216 317 78 38 79 84 61

5th March
6b 2852 0389:11 -26 287 13 81 61 72 90 52

6th March
6b 2854 0228:11 -26 197 56 75 75 64 95 43

7th March
6b 2856 0147:11 -26 188 73 67 83 55 99 34

8th March
6b 2858 0166:11 -26 179 82 58 89 46 183 25

9th March
6b 2860 0025:11 -26 169 89 49 94 38 186 17

10th March
6b 2862 2364:11 -26 160 94 41 99 29 116 9

11th March
6b 2863 0212:11 -26 325 247 4

12th March
6b 2864 2303:11 -26 150 98 32 103 21 115 2

13th March
7b 2865 1042:11 -26 326 251 12

14th March
7b 2866 2222:11 -26 141 102 24 108 13

15th March
7b 2867 1081:11 -26 316 255 2

16th March
7b 2868 2141:11 -26 132 107 16 112 6

17th March
7b 2869 0128:11 -26 387 244 8 250 18 259 28

18th March
7b 2870 2100:11 -26 122 111 8 117 -1

19th March
7b 2871 0039:11 -26 297 248 7 254 17 263 37

20th March
7b 2872 2191:12 -26 113 115 1

21st March
7b 2873 0758:12 -26 288 253 14 259 25 267 45

22nd March
7b 2874 0717:12 -26 279 257 22 263 33 272 55

23rd March
7b 2875 0636:12 -26 269 261 38 268 42 278 64

24th March
7b 2876 0555:12 -26 260 266 39 274 51 288 73

25th March
7b 2877 0516:08 -26 250 270 48 281 59 314 81

26th March
7b 2878 0435:08 -26 241 276 56 291 68 27 83

27th March
8b 2880 0354:08 -26 232 285 65 311 76 66 75

28th March
8b 2881 0313:08 -26 222 300 74 355 88 79 67

29th March
8b 2882 0232:08 -26 213 334 88 44 77 86 57

30th March
8b 2883 0151:08 -26 283 33 79 66 92 48

1st April
8b 2884 0110:08 -26 194 63 72 78 61 96 39

2nd April
8b 2885 0029:08 -26 185 76 64 85 52 100 31

3rd April
8b 2886 2348:08 -26 175 84 55 91 43 184 22

4th April
8b 2887 2307:08 -26 166 90 46 96 35 188 14

5th April
8b 2888 2146:38 -26 341 244 -1

6th April
8b 2889 2216:00 -26 156 95 37 100 26 112 7

7th April
8b 2890 1046:38 -26 341 244 -1

8th April
8b 2891 2146:00 -26 156 95 37 100 26 112 7

9th April
8b 2892 1045:09 -26 147 99 29 105 18 116 -1

10th April
8b 2893 0924:39 -26 322 242 -2 253 15

11th April
8b 2894 0841:09 -26 138 104 21 109 11

12th April
9b 2895 0843:38 -26 313 247 5 256 23

ACKNOWLEDGEMENTS

This month I am very appreciative to the UOSAT Team for the information contained in Bulletin 161 - 1986. Also, contributions were received from Bob VK3ZBB and Graham VK5AGR.

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia, is now producing a monthly newsletter containing updated satellite news, orbital predictions, Keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populace informed on the latest information available, and to realise funds for the funding of projects, or the purchase of an item/s of hardware for a future amateur satellite project; eg Phasa-3C, 4, or whatever. The cost of the Newsletter is $15 and cheques made payable to the WIA South Australian Division should be forwarded to Graham, QTHR.

To the present time the Newsletter has been a resounding success within Australia and comments are now being received from overseas amateurs, who have received copies from friends in Australia which indicate they too would like something similar in their own countries.

The Newsletter is basically an eight-page compendium of the nitty gritty details that are relevant in the subject of amateur satellite communication, this newsletter is a must.

OSUAT-2/OSCAR 11 DCE EXPERIMENT

Included in last months column was information relating to the Digital Communication Experiment (DCE) Version-2 Software, which is currently in use onboard OSCAR-11. As mentioned in that article, there is a Cyclic Redundancy Check (CRC) appended to each frame. Included this month, courtesy of the OSAT Team, are the respective Assembly Routines for the 6502 and Z80 Microprocessor Chips for those interested in writing their own software. I can personally recommend the Z80 routine, as I have included it in my software to read the DCE Title Frames. The routines are as follows:

CRC CALCULATION FOR DCE FRAMES

Every DCE frame ends with a two Byte CRC. The CRC is an error detection code, and if you use the CRC equation on a received frame, your two-byte answer should match the two-Bytes transmitted at the end of the frame. The CRC used on these frames is calculated using a CCITT CRC algorithm. For those familiar with CRCs, this CRC uses a 16-bit shift register to implement the equation \(x^{16} + x^{12} + x^5 + 1\). If you are interested in this, or if you simply wish to implement CRC checking for DCE frames, see the following 280 and 6502 machine- language programs. In using these programs on DCE frames, remember that

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AMSAT Australia

Colin Hurst VKSHI
8 Arndell Road, Salisbury Park, SA. 5109
SATELLITE ACTIVITY FOR PERIOD 1 to 30 NOVEMBER 1985.

1. LAUNCHES.

The following launching announcements have been received:-

- 1985-105A Cosmos 1701 Nov 9 USSR
- 106A Cosmos 1702 Nov 13 USSR
- 107A Raduga 17 Nov 15 USSR
- 108A Cosmos 1703 Nov 22 USSR
- 109A STS-61B Nov 27 USA
- 109B Morelos-B Nov 27 Mexico
- 110A STS-61C Nov 27 USA
- 109C Aussat-2 Nov 27 Australia
- 109D Satcom KU-2 Nov 28 USA
- 109E Oex Target Nov 30 USA
- 110A Cosmos 1704 Nov 28 USSR

Notes:-

2. The payload included an Imax Payload Bay Camera, a Continuous Flow Electrophoresis System and satellites Morelos-B, Aussat-2, Satcom KU-2 and Oex Target.

   - Orbit elements were apogee 370km, perigee 361 km, inclination 26.4° and period 623.2 min.

   - Morelos-B elements were apogee 36900km, perigee 350km, inclination 25.8° and period 655.8 min.

3. Aussat-2 elements were apogee 3571km, perigee 35765km, inclination 0.3°, and period 1455.6 min.

4. Satcom KU-2 elements were apogee 35254km, perigee 3329km, inclination 25.8° and period 655.6 min.

5. Oex Target elements were apogee 386km, perigee 372km, inclination 28.5° and period 92.1 min.

2. RETURNS.

During the period thirty-five objects decayed including the following satellites:


The CRC covers all Bytes from the <cmd> to the end of the <data> segment. It does not include the CRC itself, or the leading <10h> or <03h> Bytes.

6502 CRC CALCULATION

The following sub-routine uses three zero page locations:

- &B3 (hex 80) is a scratch location
- &81 is the most significant Byte of the CRC (transmitted first)
- &82 is the least significant Byte of the CRC (transmitted second)

When a new frame is to be checked, &81 and &82 must be set to zero. Then the routine must be called once for each Byte in the received frame, with that Byte in the A register. After this, &81 and &82 will contain the CRC Bytes. These Bytes can then be compared to the received CRC Bytes.

Stan: CKSUM:

- 180 .CKSUM

The following sub-routine uses the HL register pair in the same way that the 6502 subroutine uses the zero-page locations &81 and &82.

Z60 CRC SUBROUTINE

This subroutine uses the HL register pair to use the CRC for each Byte in the frame in the A register. The frame's CRC will be in the HL register pair. The Byte that is transmitted first is in L and the Byte transmitted second is in H.

- COMPUTE CRC ON A, INTO HL

<table>
<thead>
<tr>
<th>1986-1999</th>
</tr>
</thead>
</table>

SIDERIAL CONVERSION FACTORS -

For those readers who are running satellite prediction programs, the sidereal conversion factors for 1986 to 1999 are as follows:

AMATEUR RADIO, March 1986 - Page 45
66 THE UNGRA CONVENTION will be held over the Easter Weekend.

The Uranga Convention will be held over the Easter Weekend.
ANNOUNCING THE LUCKY DOOR PRIZE WINNERS...

1st J Payne (Ticket A1)
2nd B Astbury (Ticket A54)
3rd C Elliott (Ticket A69)

CONGRATULATIONS TO YOU LUCKY PEOPLE

WE STOCK THE LARGEST RANGE OF AMATEUR RADIO EQUIPMENT IN AUSTRALIA!
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TS-940S

KDK — FM-240
HAS BEATEN THE DOLLAR WITH SPECTACULAR MOBILE SIMPLICITY, THIS UNIQUE 2m FM RADIO IS A PLEASURE TO OWN. WRITE FOR COLOUR BROCHURE.

NEW !
6 PCS—5000
THE BRILLIANT NEW PCS-5000 2-METRE FM TRANSCEIVER C-MOS TECHNOLOGY AT ITS FINEST!

The Azden PCS-5000 features unprecedented wide frequency coverage with separate or simultaneous scanning, two ranges of programmable bands, 25W output, 20 channel memory and much more.

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THETA 500E is the new state-of-the-art micro-computer controlled communication machine. Write for specs.

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3 & 4 Band Trap Dipole .................................................................... $59
HB-443DX, 4el, 3 band ................................................................... $59

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Contests

Contest CALENDAR

MARCH
1-2 APRL DX Phone Contest (Rules January issue)
8-9 OCWA Phone QSO Party (Rules February issue)
9-9 Commonwealth Contest 1986 (Rules January issue)
15-16 Bermudienne Contest
15-16 YL-SSB Contest (Rules February issue)
15-16 John Moyle Memorial Field Day Contest (Rules this issue)
22-24 BARTG Spring RTTY Contest

APRIL
5-6 WW SSTV Contest

MAY
27-28 1986 CLARA AC/DC “Mystery” Contest (Rules this issue)

It may be anticipated that the Polish CW and Phone Contests will be held during April and looking further forward, I would expect that the CW WPX CW Contest will be held during May.

VK NOVICE CONTEST 1985

This year, 1985, VK5NOD proved too much for the opposition with a composite top novice score on Phone and CW, his total being 739 points. Congratulations on VK5NOD’s winning of the Keith Howard VK2AKX Trophy for his performance in 1984, will thus hold the Trophy for another period. Perhaps in June, we may see a real battle for the Trophy amongst the novice operators in an endeavour to wrest the Trophy away from the south east of Australia and yet they apparently are not capable, certainly hope that if you decide to express same, examination should be increased so that when the test and then dropping CW altogether. Some entered operated by Carol VK5PWA, and the entry received from stations such as VI5ALE, a club member, of meeting the current requirements of the entry.

The most active is by far 14.103MHz. The JA1DSI beacon is only on 300 BPS LSB and elsewhere also use 1200 Baud, USB, on 3.630 and 3.642MHz have been referred to, as yet, the writer has not heard any active Packet operations on these frequencies.

The protocol used is the AX-25 — older equipment uses Version 3.3, whilst the more advanced users use Version 5.5. Both are compatible.

IAN HUNT VK5OQX

FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, S.A. 5001

“Mystery” stations will be operating during the contest.


CW frequencies are: 28.035; 21.035; 14.035; 7.035 and 3.690MHz.

VK stations note some of these frequencies are outside our bands. All contacts must be made in accordance with operator and station regulations. No net, lists or cross-mode contacts.

Scoring — for the base score, CLARA members score one point per contact with non-members, two points per contact with CLARA member, three points for every CW contact.

In June and later months, CLARA members only. For base score count two points per contact, three points for each CW contact. Multiply the base score by the number of Canadian Provinces/Territories worked for the total score. The Contest Manager will add ten points to the base score for each log for every Mystery station worked.

DX station winners will be eligible for a certificate.

All logs submitted are eligible for the Mini-Prize draw. Logs must show Date/Time UTC; Band; Mode; Call Sign Worked; Report and Serial Number. Logs must be submitted by 15th July 1986. Name of Operator Worked; QTH and Points Claimed. Logs also to show full name, call sign and address of operator, and full score claimed on each copy. No logs will be returned. Contest Manager’s decision will be final.

Mail logs to the Contest Manager, Muriel Foisy VY4TT, RR 4, 1 Pender Island, BC, Canada, VON 2M0.

HF PACKET RADIO

David Pilley VK2AYD

15 Forest Glen Crescent, Beilrose, NSW, 2085

For those interested in HF Digital Communication, the following frequencies are referenced and applied for use worldwide: 7.037; 10.147; and 14.036MHz. The most active is by far 14.036MHz. Locally in Australia, 3.630 and 3.642MHz have been referred to, as yet, the writer has not heard any active Packet operations on these frequencies.

The protocol used is the AX-25 — older equipment uses Version 3.3, whilst the more advanced users use Version 5.5. Both are compatible.

Stations in the USA use only 300 Baud on HF and operate on LSB but Australia, New Zealand and elsewhere also use 1200 Baud, USB, on 14.036MHz. This is quite popular as a fast and easy way to obtain QSOs. No logs will be returned. Contest Manager’s decision will be final.

All logs submitted are eligible for the Mini-Prize draw. Logs must show Date/Time UTC; Band; Mode; Call Sign Worked; Report and Serial Number. Logs must be submitted by 15th July 1986. Name of Operator Worked; QTH and Points Claimed. Logs also to show full name, call sign and address of operator, and full score claimed on each copy. No logs will be returned. Contest Manager’s decision will be final.

Mail logs to the Contest Manager, Muriel Foisy VY4TT, RR 4, 1 Pender Island, BC, Canada, VON 2M0.
Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA 5014

**MERCURY AWARD**
This award is to encourage radio activity between members and other amateurs. One point is gained for each contact with a Federal band, with two points for special event stations, such as GB3RN. For VK stations, five points is enough for the basic award, and band/mode endorsements are available. Send log extract and one pound to Don Cawley G2GM, Bay Sound, Freshwater, Isle of Wight, England.

**HAMPSHIRE COUNTY AWARD**
This is for contacts between stations in the county of Hampshire and other amateurs. Again, for VK, five points gains the third class award, one point per station contacted. Send log extract and one pound to Don Cawley G2GM, Bay Sound, Freshwater, Isle of Wight, England.

**ABORIGINAL LAND CLAIMS AWARD**
This award is for contacting stations in Australia using the prefix JY50 during the 50th birthday celebrations of the Independent State of Papua New Guinea. VK6HQ, OPEN 340 VK4KHZ, 339 VK4ATQ, 335 ZS5CO, 232 VK2COP, 231 VK3DP, 230 VK3CNF will be a feature at Expo. The Award Manager is Don Cawley G2GM, Bay Sound, Freshwater, Isle of Wight, England.

**WORLD-WIDE AWARD**
This award is for contacting stations in Australia using the prefix JY50 during the 50th birthday celebrations of the Independent State of Papua New Guinea. VK6HQ, OPEN 340 VK4KHZ, 339 VK4ATQ, 335 ZS5CO, 232 VK2COP, 231 VK3DP, 230 VK3CNF will be a feature at Expo. The Award Manager is Don Cawley G2GM, Bay Sound, Freshwater, Isle of Wight, England.

**ENDAVOUR AWARD**
This award is for contacting RNARS members residing in Australia. Scoring is one point per member contacted, per band, with two points for VK4RN. VK amateurs need 15 points for the basic award. Log extract and one pound 50p to Mark Mullins, 24 Rigby Close, Waddon, Croydon, DRO 4JU, England.

**KUWAIT AWARD**
This award is sponsored by the Kuwait Amateur Radio Society and is available to amateurs and SWLs for contacts with reports confirmed by five Jordanian stations using the prefix JY50 during the 50th birthday celebrations for the independent state of Kuwait. Log extract and one pound 50p to Mark Mullins, 24 Rigby Close, Waddon, Croydon, DRO 4JU, England.

**ROYAL JORDANIAN AMATEUR RADIO SOCIETY**
Did you work five Jordanian stations using the prefix JY50 during the 50th birthday celebrations for the independent state of Jordan? If so, you are eligible to receive a commemorative certificate. The special prefix was used during the period 7th-21st November 1985. A certified log extract and 10 IRCs, or US$5 is all that is required to the Royal Jordanian Amateur Radio Society, JY50 Celebration, PO Box 2353, Amman, Jordan.

**EXPO 86**
Noted Norwegian explorer and anthropologist, Thor Heyerdahl, will be the feature at the third Expo 86 symposium on 8 and 9th May 1986. By Heyerdahl in known for his Kon-Tiki, Ra and Tigris voyages. In 1947, he crossed the Pacific on a balsa wood raft to prove the theory that Peruvian Indians could have settled in Polynesia. The Voyage started on 21st November 1985. A certified log extract and 10 IRCs, or US$5 is all that is required to the Royal Jordanian Amateur Radio Society, JY50 Celebration, PO Box 2353, Amman, Jordan.

**QSP**

**AVIATION SATELLITE LINKS**
The International Maritime Satellite Organisation, INMARSAT, planned to have up to nine new satellites in orbit in the next decade. INMARSAT was set up as an inter-governmental agency in 1979 to create a global satellite communications system for ships. It now has 44 member nations and is developing a second generation of satellites capable of handling aviation as well as maritime communications. An aeronautical satellite network could also enable airline passengers to make phone calls or use their personal computers while flying, thereby overcoming the problem of limited service except over the polar latitudes. This is the sort of service currently available through INMARSAT's maritime communications network which provides voice, data and facsimile links to 400 ships and oil rigs world-wide. It is now moving into aeronautical satellite communications which will provide airliners with global communications for weather, and air traffic reports in areas where conventional radio reception is poor. Computers on board airliners could also be linked via satellites to earth stations, making flight recorders virtually redundant by providing a ground monitor of all information stored in them.

**WICEN**
NDO ANNUAL EXERCISE COMCOORD 85
WICEN participated in the annual Natural Disasters Organisation Exercise COMCOORD 85, which was held last November. The exercise scenario involved simulated natural disasters in the Northern Territory and Queensland. A cyclone situation was created for Darwin and "Bunbo" the aircraft involved a crash in outback Queensland. Due to the sensitive nature of these scenarios, should messages get misconstrued, amateur radio involvement was limited to a communications demonstration and passage of innocuous, yet factual reports. The net ran for over three hours and passed a number of messages satisfactorily achieving the WICEN objective.

THANKS TO WICEN CORE-DONATORS: 
The Divisional WICEN Co-ordinator changed from John Mitchell VK5JM, to Bill Wardrop VK5WM, in October 1985, and the WA Divisional Co-ordinator changed from Syd Jenkins, to Jack Shurmer VK6QS, in July 1986. It is noted that Syd gave nearly nine years service to the position, thanks for the effort.

**WICEN 80m CALLING FREQUENCY**
It has been brought to my notice that the 80 metre WICEN calling frequency adopted at the last Federal Convention, namely 3.605 MHz, is also the switch on default setting for a number of microprocessor controlled transceivers. These operators appear to have a habit of switching on and calling HAARL-1 and VK5WM-1. With the switch off, VSWR? before listening on the frequency. This is distracting to WICEN and, furthermore, makes the frequency a very popular one to call QG on. Consequently, it has been decided the WICEN Calling Frequency be changed to 3.605 or 3.610 MHz. Any views on this proposed change would be appreciated.

<table>
<thead>
<tr>
<th>Num</th>
<th>Call Sign</th>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>323</td>
<td>ZS5CO</td>
<td>Reg Sweet</td>
<td>104</td>
</tr>
<tr>
<td>333</td>
<td>VK5JR</td>
<td>K.M Maroney</td>
<td>100</td>
</tr>
<tr>
<td>335</td>
<td>VK5EZ</td>
<td>Lindsey Collins</td>
<td>100</td>
</tr>
<tr>
<td>337</td>
<td>VK4ATQ</td>
<td>Brian Pittman</td>
<td>119</td>
</tr>
<tr>
<td>340</td>
<td>VK4KHZ</td>
<td>Bill Wallace</td>
<td>121</td>
</tr>
<tr>
<td>228</td>
<td>VK4QHZ</td>
<td>Bill Wallace</td>
<td>125</td>
</tr>
<tr>
<td>229</td>
<td>VK4HH</td>
<td>J.L. Hawkins</td>
<td>107</td>
</tr>
<tr>
<td>230</td>
<td>VK1CNP</td>
<td>Norman Fairman</td>
<td>113</td>
</tr>
<tr>
<td>231</td>
<td>VK3DP</td>
<td>John Kelleher</td>
<td>104</td>
</tr>
<tr>
<td>232</td>
<td>VK2COP</td>
<td>Bill Martin</td>
<td>102</td>
</tr>
</tbody>
</table>

There were no CW or RTTY applications for this award.

**WIA VHIF AWARDS**
These are the **WIA VHIF awards** first published in In AR, July 1985. These are the Worked All States (VHIF) which was first issued in October 1949: VHIF CC which was first issued in January 1962; and Worked All VHIF Call Areas (VHIF) in January 1973. Until recently, all awards issued were on six metre contacts, but at the time the award was issued it was envisaged that VHIF DX-peditions might have to be made to mount top and to to State borders to secure these awards. On two metres, VK8 was the stumbling block for many years. At length, Steve VK4ZH mounted two expeditions to the Northern Territory border and was successful in working VK6 and VK8. He received the WAS (VHIF) two metre award in April 1984. Others adopted the voluntary restriction of working only from their home base-stations, and they also have now successfully Worked All States on two metres.

<table>
<thead>
<tr>
<th>Num</th>
<th>Call Sign</th>
<th>Name</th>
<th>Band</th>
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</thead>
<tbody>
<tr>
<td>160</td>
<td>VK5RO</td>
<td>Colin Moore</td>
<td>Two</td>
</tr>
<tr>
<td>161</td>
<td>VK5SL</td>
<td>Eric Jameson</td>
<td>Two</td>
</tr>
<tr>
<td>187</td>
<td>VK4GZK</td>
<td>Ken Jewell</td>
<td>Two</td>
</tr>
<tr>
<td>189</td>
<td>WAVKCA (VHIF)</td>
<td>E Penkis</td>
<td>Six</td>
</tr>
<tr>
<td>25</td>
<td>VK4AVP</td>
<td>Bill Wallace</td>
<td>Six</td>
</tr>
<tr>
<td>26</td>
<td>VK4ZFP</td>
<td>Bill Wallace</td>
<td>Six</td>
</tr>
</tbody>
</table>

There were no applications for VHFF VC.

**RNARS AWARDS**
The Royal Naval Amateur Radio Society sponsors five awards which are available to non-members.

<table>
<thead>
<tr>
<th>Num</th>
<th>Call Sign</th>
<th>Name</th>
<th>Band</th>
</tr>
</thead>
</table>

**AUSTRALIAN DXCC NEW MEMBERS**
(since the last listing published in AR, July 1985).

A brief summary of the award program of Reuse des Emateurs Francais will be given in the next column. However, I can supply the complete leaflet on receipt of a self-addressed envelope.

The first, Diplome des Departements Français de la Metropole offers 40 points for working 40 or more departments out of a total of 95, the department number being given by the first two digits of the five-figure post code.

Diplome des Provinces de France (DPF) may be claimed for contacting all 22 provinces — a province is a group of two or more neighbouring departments. The LEAF ref leaflet has a full list. Diplome de l'Union Francophone (DUF) is for QSOs with countries which had, or still have French connections, ranging from DUF1 (five countries in three continents) to DUF4 (20 countries in six continents).

These three awards have five-band and SWL versions.
I begin the column this month by thanking the people who gave active support to the Intruder Watch in December 1985. They were: VKs 1NET, 2BGQ, 2KIPI, 2PSF, 3XBG, 4AXX, 4BHJ; 4BHJF; 5G2J; 5TL; 7RH and Mr G H A Bradford.

TAXI DRIVERS IN ASIA

You may remember last month, I mentioned a problem which has appeared on the 28MHz band, and which, if left unattended, could well become a major international problem. I also indicated that we were getting reports from taxi drivers in Asia. A note from Bob ZL1BAD, the IARU Monitoring System International Co-ordinator, tells me that he has made contacts with Rankin VK3QOV, Chairman of IARU Region 3, to have the Hong Kong Amateur Radio Society look into the matter. Lindsay VK5GO, the VK3 IW Co-ordinator, has reported activity from a station on CW signing XSG/347, etc. This station is Shanghai Radio, which is fixed coastal station, and shouldn't be appearing on 21.059MHz.

STATISTICS FOR DECEMBER

Statistics for December 1985 are as follows: 312 broadcast Intruders; 151 CW intruders; 135 RTTY intruders; 79 other modes and 73 intruders identified. Also, Steve VK2PS, was worried about a carrier appearing on 28.282MHz, which he could not track down as a listed beacon. However, he subsequently discovered that it is indeed VK4RFL, which Identifies in FSK.

AWARDS

I am pleased to hear from Col VK4AKX that both Gordon VK4AKL, the VK4 IW Co-ordinator, and Norman VK4BHJ, a stalwart of the Intruder Watch, were both recipients of the WIA 75th Anniversary Medallion. Congratulations to both of you!

PERSONALLY SPEAKING

Just a couple of personal items to mention in passing. I am very nervous at the moment as I have 109 OSL cards en route to the USA to the ARFL...I hope they make the return journey to the USA...whatever happened to the amateur allocation of 7kHz to 7.1MHz???.

WHERE DO THE MAJORITY OF 7MHz INTRUDERS COME FROM?

Radio Tirana, on 7.090MHz, is now sharing the frequency with Radio Pakistan...this column is becoming more of a short-wave-listening column...what happened to the amateur allocation of 7kHz to 7.1MHz???.

Jamming stations still prolific on 7MHz...the Vee beacon is still being heard on 7.030MHz...Col VK4AKX observes, and correctly, that 99 percent of intruders on the 7MHz band come from Russia...surprise, surprise, have been said, "If the USSR would observe the regulations, we would have almost nothing to worry on the amateur bands"...could get on with the business of trying to contact other amateurs..."!

Keep trying for the Intruder Watch Net on 3.595MHz, on Wednesday evenings at 1000UTC, when daylight saving is in effect, and 1030UTC Australian Winter Time.

See you next month, and please think of the Intruder Watch if you hear something that shouldn't be on the amateur bands.
TELESCOPIC MASTS
The Clark Masts QT and SQM series are very lightweight, air-operated telescopic masts. They may be extended by handpump, attached or remote, driven by a powered power pack. They are normally not rotatable and may be locked when extended.

Eighteen models are available in all QTM ranges, from 4 to 12 metres, with headload capacities up to 10kg. SQM range up to 15 metres with 10kg headload. The approximate weight of a mast with handpump is between 6 and 20kg. There are also manlifts, some of which are raising lightweight omni-directional antennas, temporary site floodlighting, meteorological instrument supports, forest rainfall measuring, and in the arts, all forms of scientific investigations, crop spraying swath markers, accident warning high level beacons, or observation using a CCTV Camera.

For further information please contact Scalar Distributors Pty Ltd, Head Office, 20 Shelley Avenue, Kilsyth, Victoria 3137. Phone (03) 725 9677 or Branch Offices, Sydney (02) 502 2668, Brisbane (07) 395 1186 or (07) 395 1817, Perth (09) 446 9177.

COAXIAL CONNECTORS
Scalar Industries now offer a comprehensive range of coaxial connectors. The range includes; 'P' push on connectors; 'S' series screw type coupling versions of coaxial cables which are used extensively on television systems and electronic testing equipment, UHF (PL259) general purpose connectors; 'P' push on connectors with coaxial cables RG58, RG59, RG6, RG213, URG5 and UR67; BNC Connectors which feature a quick disconnect, bayonet lock coupling — they are small, lightweight connectors suitable for use with smaller RF coaxial cables and will operate to a peak of 500 volts and are weatherproof, TNC connectors — are screw type coupling versions of the BNC series but they have the advantage of better performance under vibration and better weather-seal since greater pressure can be exerted on the gasket by a screw type nutting.

The N series are a line of low voltage, constant impedance connectors for use with small and medium size RF cable, they are weatherproofed, sealed at 1000 volt peak and are suitable for use with frequencies up to 10 000MHz.

Crimp type connectors are available in UHF: BNC; TNC; and N types and these crimps reduce associated manufacturing costs and allow smaller RF coaxial cables and will operate to a peak of 500 volts and are weatherproof, TNC connectors — are screw type coupling versions of the BNC series but they have the advantage of better performance under vibration and better weather-seal since greater pressure can be exerted on the gasket by a screw type nutting. The N series are a line of low voltage, constant impedance connectors for use with small and medium size RF cable, they are weatherproofed, sealed at 1000 volt peak and are suitable for use with frequencies up to 10 000MHz.

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Scalar also have adaptors for connecting the different connector types to one another and a range of coaxial cables.

For further information please contact Scalar Industries Pty Ltd, Head Office, 20 Shelley Avenue, Kilsyth, Victoria 3137. Phone (03) 725 9677 or branch offices, Sydney (02) 502 2688, Brisbane (07) 395 1186 or (07) 395 1817, Perth (09) 446 9177.

DATA MANUALS ON JAPANESE SEMICONDUCTORS
The 1985 CQ Data Manuals, with information on Japanese Semiconductor devices have always been hard to obtain. Fortunately, IMARK Pty Ltd have now issued these manuals which list most major world-manufacturers for 4000B series, 4500B series, 4 000B series and similar devices with their specifications and lists most major world-manufacturers including Japanese devices. Devices covered include Static RAMs, Clocked RAMs, Dynamic RAMs, P-ROMs, and UV-EPROMs.

* "The Power & Industrial Semicondutor Manual" provides technical and package details as well as some typical circuits for power devices. Most devices listed are of Japanese origin.

* "The Interface IC/Device Manual" provides technical and package details for over 400 devices used mainly with computers. Products made by Fairchild, Motorola, Signetics, Texas Instruments, AMD, National Semiconductor, Hitachi, Sanyo, Mitsubishi, Toshiba, Sprague, and NEC are listed.


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WIA VIDEO TAPE PROGRAM TITLE LISTING

NOTE:
* denotes Copyright: no copy service is available.
** denotes Optically Converted to PAL from NTSC by WB2LLB — some flicker is evident.

GENERAL PROMOTIONAL FILMS
- The Hams Wide World
  - ARRL
  - ARRL
  - ARRL
  - ARRL
  - ARRL
  - ARRL

- This Is Amateur Radio
  - ARRL
  - ARRL
  - ARRL

- Moving Up to Amateur Radio
  - KARRL

- This Week Has Seven Days Looks Into
  - HSV7

- Amateur Radio — The National Resource of Every Nation
  - VK5KG

- The World of Amateur Radio
  - ARRL

HISTORIC INTEREST
- Wireless Telegraphy — circa 1910
  - ARRL
- Opening of Burley Griffin Building — SA
  - VK5KG
- History of ATV In South Australia
  - VK5KG
  - VK5KG
- ATV In Australia 1978 — made for British
  - VK5KG
- ATV Club
- ATV In United Kingdom 1978 — reply from
  - G8CJS

- Historic DX-peditions
  - Ch 2,7,9 & 10

ANTENNAS AND PROPAGATION
- G6CJ's Aerial Circus
  - G6CJ
- Wire Antennas
  - VK5KG
  - VK5KG
- Loaded Wire Antennas
  - VK5KN
  - VK5KG
- Getting Started in Understanding the Difficulty
  - VK5NX

SPACE — GENERAL INTEREST
- Apollo 13 Glaster
  - VK5JM
- SSTV Pictures from Space — Voyager
  - VK5KG
  - VK5KG
- Amateur Radio's Newest Frontier
  - ARRL

- AUSAT — Australia's Domestic Communications Satellite
  - VK5JM

AMATEUR SATELLITES
- Getting Started in Amateur Satellites
  - VK5NM
  - VK5KG
- An Introduction to Amateur Satellites (Part 1)
  - VK5KG
  - VK5KG

NOTE TO INDIVIDUAL AMATEURS
Since the inception of the WIA Federal Video Service, cassettes have been made freely available to all comers, especially isolated amateurs. However, recently there has been a rapid rise in the number of requests from individual amateurs, some asking for over 10 hours of programs at one time.

Video duplication is a real-time, one-at-a-time operation for which the costs of maintenance of the equipment is not small. Obviously, the Service is much more economical if, say, one tape is seen by 30 members of a club than if each of the 30 members were to request their own personal copy. If every member of the WIA requested just one program, it would take about four years at 40 hours a week to service!

So, in an effort to encourage requests from groups of amateurs rather than individuals, from now on a Duplication Fee of $2 per hour, or part thereof, will be payable in advance for all requests from individuals. All such fees will go towards upkeep of the duplication equipment.

NOTE TO LIBRARIANS
A number of educational institutions have already availed themselves of the technical lecture tapes from the WIA. While this service will continue to be available, from now on a Duplication Fee of $10 per hour, or part thereof, will be payable in advance by all institutions not affiliated with the WIA. All such fees will go towards the production costs of future Technical Lectures.

... dont expect u will hear any chirp nw ... — The Shortwave Magazine

WIA VIDEO LECTURES NOW EVEN MORE WIDELY AVAILABLE!

Now every radio club can provide their members with quality technical lectures on subjects covering the whole range of amateur radio activities by taking advantage of the WIA Federal Videotape Library. You will find this a boon, particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for regular meetings.

Individual amateurs and librarians should take note of the new Duplication Fees at the end of this article.

For radio clubs affiliated with the WIA, it is inexpensive and easy. Here is how it works:

Except for those titles for which the WIA does not hold a copyright licence, all you have to do is... Supply the Videotape Co-ordinator with a video-cassette of an available format. Engrave another stamped, return-addressed padded mailbag and the program is free for you to use in support of amateur radio in your area... including copying and transmission over the air if you wish.

Those programs which are copyright are available only on loan. To obtain any of them send with your request:

Information about your preferred VCR format.

A statement signed by a responsible officer of your club that "I undertake that while...

(Program Title) is assigned to me, I will not allow it to be transmitted over the air, nor copied by any means whatsoever, and that I will return the same promptly after showing".

A stamped addressed padded mailbag suitable for cassettes of your preferred format.

The present available formats are:

- U-MATIC — size 260 x 173 x 40mm, mass 900 grams (to institutions only). Standard play — one hour maximum only. Standard sound only on channel 2 (No Dolby).
- VHS — size 200 x 110 x 30mm, mass 350 grams.
  - Standard play four hours maximum, or long play eight hours maximum as requested.
  - Standard Sound — Dolby On or Off as requested. Hi-Fi FM Sound also present on all VHS cassettes.
- VIDEO 8 — size 103 x 68 x 20mm, mass 80 grams. Standard play one and a half hours maximum, or long play three hours maximum as requested.
  - Standard play one and a half hours maximum, or long play three hours maximum as requested.
  - Hi-Fi FM Sound is standard (No Dolby).

In any case, the smaller and lighter the cassette, the less postage.

* NOTE: Be sure to request Standard or Long Play. Dolby On or Off.

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### DATA TRANSMISSION
- Getting Started in Amateur RTTY
  - VK5KM
- Amateur Packet Radio
  - VK5AGR
- Demonstrations of VR/RTV's Micro-Computer Controllers and Understanding Micro-Processors
  - VK5KG
- An ATV Ham-Shack Micro-Computer
  - VK3AHJ
- Getting Started in Amateur Micro-Computers
  - VK5IF

### AMATEUR TELEVISION: Technical
- The Signal to Noise Story
  - VK3ATY
- UHF Pre-Amplifiers
  - VK3ATY
- Getting Started in Amateur Television
  - VK5KT
- Testing Amateur Television Transmitters
  - VK5KG
- High Definition Television Tutorial
  - Don Fink
  - W6BLL
  - W6AM
- ATV Hamfest, York Pennslyvania, September 1983

### AMATEUR TELEVISION: Activity
- ATV in Australia 1980/81
  - VK5KG
  - VK5KG
- ATV in United Kingdom 1978/81
  - G8CJG
  - W6BLL
  - VK3AHJ
- ATV in Victoria, 1984
  - VK5KG
  - VK5KG

### MISCELLANEOUS
- An Auxiliary Battery Charger
  - VK5NX
- Lecture - Winning Fox Hunts
  - VKSTV
- Getting Started in Amateur Construction
  - VK5KG
- Communication Consequences of Nuclear War
  - Dr. John Coulter
- The Far Eastern Broadcasting Company
  - VK5KG
- The Australian “Over the Horizon Radar”
  - VK5KG
- What to Expect When the Radio Inspector Geo Carter
  - VK5KG

### COMPUTER BUFFS
- Please remember, when submitting computer programs for publication in Amateur Radio, to use your blackest ribbon on your print-out. It is preferable to use the print-out directly in AR, as this alleviates errors developing.

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**Education Notes**

For those of you interested in figures, here are the statistics for the November examinations. (For those not interested in figures—skip the table but please read the rest of the column).

<table>
<thead>
<tr>
<th>STATE</th>
<th>NO</th>
<th>AOCOP</th>
<th>NAOCOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>15</td>
<td>18.2</td>
<td>19.9</td>
</tr>
<tr>
<td>VK2</td>
<td>20</td>
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<tr>
<td>VK3</td>
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<td>27.5</td>
<td>28.4</td>
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<tr>
<td>VK4</td>
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<td>28.4</td>
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<tr>
<td>VK7</td>
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<tr>
<td>TOTALVK</td>
<td>70</td>
<td>28.4</td>
<td>28.4</td>
</tr>
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</table>

These figures are, on average, down on the pass rates for AOCOP and up on the pass rate for NAOCOP as compared with the August examinations.

This time, however, I have been able to have a good look at the papers used. I cannot find any significant differences between the standards of the individual papers used at each level. Admittedly, this is “feeling” only—no actual statistical analysis has been made, so I find it hard to account for the differences between States. I think I have said this before.

Comparing the two levels of exam, I have the “feeling” (again) that the NAOCP exam may have been more difficult than some previous papers in that more questions related to topics most candidates find more grasp. However, information gathered during our work on the Study Guide suggests that most instructions are giving attention to those topics in a fair degree of depth.

The aspect that concerns me most is the consistently low pass rate for AOCPLAOCP. I cannot believe it is due to the exams being set at too high a level, or to the poor quality of the papers. Overall, I could find little fault with the papers. Until we have a fully detailed syllabus at each level, there will be little use in an occasional question which some consider to be on a “fringe” area of the course.

Now for the commercial. I would very much like to have more feedback from those helping candidates to prepare for the exams. I do get some by listening around the bands, but this is not enough. By the time you read this, the February examinations will be not long past. Please, if you have been involved with a class, or even a single student, drop me a line with your comments on candidate’s opinions of the papers and, more importantly, compare the results with your expectations of the candidate’s abilities. If there are suggestions that questions asked have been outside the syllabus, let me know so I can track them down, and so we can assess whether, perhaps, those topics should be included in the syllabus.

I have mentioned previously that our Study Guide for the NAOCP is almost ready. For the Guide for AOCP, I would like to have much more input from Division and individual notes. The revised syllabus are available in leaflet form from DOC Offices, or from me—so please have a look and let me have your ideas on some of the sections. Incidentally, the revised syllabus will be used for the exams in May and thereafter.

I am still trying to maintain an Education Net to collect feedback and ideas. It hardly seems to be worthwhile, but I am sure it has possibilities. Why not give me your opinion on air instead of paper—Thursday nights, 1130UTC, 3680MHz ± 50kHz?

Come up and talk to me sometime. 73 Brenda VK3KT.

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**AMATEUR RADIO, March 1986 - Page 53**
Pounding Brass at the Peninsula School Amateur Radio Group Club Station, VK3CPS, is Chris Chapman VK3VCC. Looking on are Anthony Hildebrand and Michael Gong.

THE GLADESVILLE DISTRICT EXPERIMENTAL RADIO CLUB — VK2ADY 1935 — 1985

Ken Andrews VK2ATK
32 Aeolus Avenue, Ryde, NSW. 2112

The Gladesville District Experimental Radio Club (GDERC) came into existence in 1935, largely as a result of the enthusiasm of the Founding Fathers, Charlie Fryar VK2NF and Wal Webster VK2EW. It thrived until the outbreak of World War II, when, in common with all amateur radio activity, it went into forced recess for the duration. Members packed up their amateur radio gear in the then ubiquitous butter box and took it to the Radio Inspectors' Store in the then Grace Building, at King and York Streets in Sydney.

After the war, with many prospective amateurs fresh from radio training in the services, the club recommenced operation under the guiding hands of Charlie and Wal, once again.

By the late 1940s, it could fairly claim to be a force in the local amateur radio scene, with well-known figures of the time, such as Charlie Fryar and Wal Webster, active members. The club thrived until the outbreak of World War II, when, in common with all amateur radio activity, it went into forced recess for the duration. Members packed up their amateur radio gear in the then ubiquitous butter box and took it to the Radio Inspectors' Store in the then Grace Building, at King and York Streets in Sydney.

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attended weekly meetings, complete with guest speakers, construction sessions, fox hunts, field days, etc. A 40 metre transmitter and receiver was constructed and housed in the Club Rooms (a converted stable/garage), at the rear of a residence on the corner of Sunnyside Street, and Victoria Road, Gladesville, and operated by club members under the then club call sign of VK2ADY.

"166 mcf/s" (sorry MHz) was the immediate post-war "2 metre" allocation, and the club took a special interest in developing this band. Modulated oscillator/super regen was the "state-of-the-art" technology, and beautifully home-constructed gear produced and displayed by such master-craftsmen as Charlie Fryar VK2NJP, Horrie Lopthorne VK2HL, John Miller VK2AMF and Allan Tollow VK2AST, and proved at many field days, with portable stations out on high ground, such as Leppington or Kurrajong Heights, striving to work back into Sydney. (This was hot-stuff in those days).

All gear was, of course, converted disposals or home-brew. It also used valves (remember the 954 acorn series, and 7193s and RK34s with both plate and grid caps?) which made for power-hungry gear. Portable petrol driven alternators were about 30 years down-the-track, so the gear was generally powered by ex-disposals generators driven by the biggest accumulators one could scrounge.

The club also took a keen interest in 40 metre Fox Hunts, and weird and wonderful were the portable creations of those days.

The accompanying photograph shows members present at a meeting in 1949, but listed separately are many others who were either then, or at other times, also members of the club.

Sadly, as the younger members married, built homes, raised families, or moved away, the club went into a decline, and finally went into permanent recess in the mid-1950s.

The list of members contains names and call signs which, I am sure, will awaken memories in our older brethren. While a number are now Silent Keys, some have moved away, including interstate; others allowed their call signs to lapse, and with later re-awakened interest, had to take out new call signs.

Many, however, are still active on the New South Wales scene, one of the most notable being Wal Webster VK2EW, one of the original founders of the club, and now aged 74.

This photograph depicts some of the faces seen at the inaugural meeting of the South-West Zone of the WIA NSW Division, which was held on 5th July 1953.

At the meeting, the chairman was the late Jim Corbin VK2YC, then President of the VK2 Division. Members came from Wagga, Tumut, Griffith, Albury, Narrandera, and Coonam.

From this initial meeting evolved the Annual South-West Zone Convention, which was first held at Lake Albert, Wagga Wagga, in October 1953.

REAR (I to r): Unknown; Don Haberect VK2RS; Unknown; Lyn Turner VK2AQE/2ANI; Stan Mitchell VK2AID (SK); Unknown; Brian Jones; Ted Bruitt VK2AXD.

FRONT (I to r): Ross Weeden VK2PN; Arthur Phipps VK2EU (SK); Geoff Page VK2BO; Jim Edge VK2AJO; Bruce Fleck; Jim Corbin VK2VC (SK); Stuart Savage VK2PL/2BHR.

The photograph was taken by Alf Moye VK2BW (SK) and contributed to Amateur Radio by Jim Edge VK2AJO.

CLOTHESLINE AERIAL

The accompanying photograph is a mini-20 metre, two element Yagi, referred to by the owner as the "Clothesline Antenna". The frame-work is actually salvaged 'rotary clothes hoist' on a manual rotating tower, and it works extremely well — just listen for Ron VK3MB, from Harkaway, Victoria, for the proof.

SMALL PORTABLE SATELLITE TERMINAL

A portable satellite terminal which can transmit and receive written text just about anywhere in the world has been designed to fit into a single briefcase.

Existing terminals needed to be packed into two large suitcases.

The designer, 30 year old Norwegian, Hans Christian Haugli said it would work anywhere provided there was an unimpeded view to a satellite. Either in the open or through a window.

Haugli developed the system with a team of fellow engineers at the London headquarters of the International Maritime Satellite Organisation, INMARSAT. It will cost about £7 380 in its present form.

The system consists of a box the size of a large detergent pack with an omni-directional antenna bulging out of a plastic bubble at one end. It connects to a small battery pack and a mini computer keyboard with a weight including batteries of 11.5kg.
SPECIAL NOTICE

ATTENTION - VK2 DIVISION MEMBERS

The 1985-86 Annual General Meeting of the New South Wales Division will be held in the Auditorium of the Granville RSL, at 2pm on Saturday, 5th April 1986.

Nominations for the Council and Agenda items for inclusion in the business paper must be received by 2pm on Wednesday, 5th March 1986, at the registered office of the Division — 1st Floor, 109 Wigram Street, Parramatta. (By post to PO Box 1066, Parramatta, NSW. 2150).

Nomination forms are available from the Office.

A separate posting of the Annual Report and Financial Statement, together with any other matter for the AGM will be sent to members during this month, March 1986.

Signed: Jeff Pages
Secretary

I had planned to make this issue another VK2 Special. However, as the deadline approached I was still awaiting some of the promised material.

One item which did arrive was an historical look at the old Gladesville District Experimental Radio Club, written by Ken VK2ATK, an early member of that club.

It would be nice to cover each club, past and present, in a small article, so club secretaries be on the lookout for a letter from me in the near future. The subject has been brought to the clubs before in the affiliated club posting, but this method seems to leave a lot of clubs matters? Call (02) 689 2417 or write to the office to update the record in the office as to which portion of the band is occupied by the Friends Provident Life Office.

They are well worth looking at and they do make an ideal present from the family when you (or they) cannot think of a (useful) thing for you, the amateur.

WICEN NOTES

The annual co-ordinators conference will be held on Sunday, 2nd March, in Sydney. WICEN subscriptions for 1986 will be $5.00 and the WICEN Net is held on Wednesday evenings 7150 and 80 metres, 3.600MHz, at 8.30pm on Thursdays.

URUNGA-AT-EASTER

The annual Field Day-Convention weekend will be held over the Easter period at the New South Wales mid-north coast town of Urunga.

Many of the events this year have been designed without the need to use your car.

A program and other details may be obtained from the organiser — Max Francis VK2BMK, 23 William Street, Bellingen, NSW. 2454.

Further details will be given on the Divisional Broadcasts, 11am and 7.30pm, Sundays.

THE CHANGING FACE OF ATCHISON STREET

It is approaching four years since the move to Parramatta. Number 14 has been demolished and in its place is a three story office block which is occupied by the Friends Provident Life Office (NSW Branch).

JOINING FEE DELETED

At the January Council meeting, it was decided to abolish the joining fee from the Division membership fees, to be effective from 1st January 1986. The fee for this year, which has remained unchanged for several years, is — Full Member $31.50 and Associate Member $29.50.

FEED-BACK REQUIRED

As previously mentioned, a 23cm beacon has been installed at Dural on 1296.420MHz. The next band to be established will be 10GHz. Some feedback is required as to which portion of the band is occupied by the Wireless Institute of New South Wales mid-north coast town of Urunga.

Many inquiries rarely produce a reply. Another item we would like for display at the Parramatta Office from those who have them, is a sample copy of any awards your club or group may purchase.

GROUP CLASSES

This is the time of the year when many groups start their various classes. Many inquiries are received about classes, both in the city and the country. Has your club upgraded the records in the office about classes and who to contact about them, as well as general club matters? Call (02) 689 2417 or write to the office to update the reference material— please!}

THE END OF A YEAR

This month is recognised by the VK2 Division as the conclusion of the 75th Anniversary Celebrations.

This will be marked by the Seminar, to be held on Saturday, 5th March, at Amateur Radio House, 109 Wigram Street, Parramatta, with a 10am starting time. Included in the program will be the closing of the Time Capsule. Bring your QSL card along for inclusion. If you cannot attend, post a QSL in to the Office so that it arrives prior to Friday, 7th March.

Next door, on the railway station side, the adjoining four properties have also been replaced. The last old property is currently being demolished.

In the block behind Atchison Street, more than one-third is currently being re-developed. The Division occupied Number 14 from 1960 to 1982. It was known as the Wireless Institute Centre, or WIC.

Many of the reasons advanced by those promoting the move from Atchison Street was to obtain a location which was close to the geographical centre of Sydney, hence equally accessible to all. If you are yet to visit Amateur Radio House, or have not been for a while, why not come out to the Seminar on 8th March?

AR

ARTICLE:

NOTICE OF AGM

Notice is hereby given that the AGM of the West Australian Division of the Wireless Institute of Australia will be held on Tuesday, 22nd April 1986, at the Institute of Engineers, 712 Murray Street, West Perth, at the conclusion of the General Meeting.

Business to be transacted will be:

- Consideration of Council's Annual Report
- Election of Office Bearers, vis: President; Vice-President and seven other councillors
- Election of two auditors
- Appointment of a patron
- General business which has been duly notified

Agenda items will be advised on the Division News broadcast on the three Sundays prior to the AGM.

Members unable to attend may appoint a proxy in writing in the following form: I, , , , , being a member of the Institute hereby appoint , , , also a member of the Institute to act for me as my proxy and in my name to do all things which I myself present could do at the AGM of the Division to be held at the Institute of Engineers, West Perth on Tuesday, 22nd April 1986.

Signature
Witness
Date

Nominations for council must be tendered in writing to the Secretary, signed by two members and the nominated members acceptance 42 days prior to the AGM.

General Business Agenda Items must be tendered in writing to the Secretary, signed by three members, 42 days prior to the AGM.

Fred Parsons
Honorary Secretary

SOUTH PACIFIC TELEVISION SERVICE CONSIDERED

The Australian Broadcasting Corporation has been asked by the Department of Communications to look at the feasibility of a satellite television service to cover the south Pacific area.

Such a service, using 'Aussat', would cost about $25 million a year and reach 5.5 million people in Papua New Guinea, Fiji, Kiribati, Tuvalu, New Caledonia, West Soomato, the Cook Islands, Tonga, Vanuatu and the Solomon Islands.
One of the most pleasant ideas to emerge during the WIA's 75th year, which, let's face it, was full of many pleasant things, was the striking of medals which were to be given to those people who had given special service to the WIA in 1985.

In this Division, we send Christmas cards to the 60, or so, volunteers who give their time and energy each year in some way or another, to the WIA. They may be a Divisional Officer, a member of the Morse Practice Panel, or one of the many Sunday Morning Relay Stations, or, perhaps, they just help at meetings, or cater at Christmas socials and conventions. Whatever they do, their only reward is their own satisfaction and the Council's thanks in the form of a Christmas card. With the Christmas cards everyone (hopefully) receives one if they have done something for the Division during the year.

With the medallions it was different. Each Divisional President, Federal Councillor and Federal Officer was sent one from the Federal Executive. We were then told that the Divisional Council could nominate "about 20" deserving members of our Divisions.

What a headache! Whom to choose and who to leave out? After much "soul-searching" and even a heated discussion, the following members were decided upon.

John Mitchell VK5JM
Bill Wardrop
Lindsay Collins VK5GZ
John Butler VKSNX
Joy Charles VK5YJ
Graham Hortin-Smith VKSAOZ
Bob Allen VK5BJA
Jack Coutler VK5JK
Jack Wright VK5VF
Jill Wardrop
Ray Dobson VKSDI
David Clegg VK5AMK
Don McDonald VK5ADD
John Gardiner
Ken Westerman VK5AGW
Jenny Warrington VK5ANW

MARCH GENERAL MEETING

The March General Meeting will be held on Monday, 24th March, beginning at 8.00pm, with doors open at 7.30, in the Griffin Centre, Civic. The topic will be batteries, and their use in amateur radio. The Book-Store and QSL Bureau will be available, as usual.

MEMBERSHIP FEES

A quick update on the VK1 membership fees. The range of fees for VK1 members are:

- Full Associate: $34.00
- Family: $22.00
- Student: $11.00
- Pensioner: $24.50

NOTE: It is necessary to produce a Pensioner Health Benefits Card for Pensioner concession.

VK1 AWARD RECIPIENTS

Phil VK1PJ, the VK1 Awards Manager, advises the following awards have been issued since the last publication:

- VK2CZX and ZL1AQO received the Basic Award.
- VK18AT received a Silver Upgrade.
- JA4JBZ and L70227 received the Basic Award.

Congratulations to all those listed for their achievement.

JOHN MOYLE FIELD DAY

As previously mentioned in these columns, the VK1 Division will be running a station in the John Moyle Memorial Field Day Contest. The details are as follows:

Date — 15 and 16 March; Call Sign — VK1WI; Location — Bulls Head in the Bridabella Ranges; Frequencies will be 160 metres through to 23cm. The site to be used is west of Canberra, at Bulls Head, in the mountains. The site is at an elevation of 1386 metres and is an excellent VH-F/UHF location with AGM grid co-ordinates of 35 degrees 23 minutes 13.763 seconds south; 148 degrees 48 minutes 44.186 seconds east — it is at Zone 55, Eastern Time Zone 11, Co-Ord. E 508850, N 608230. We will be monitoring the usual call-channels of 52.100, 144.100, etc., as well as keeping a watch on the beacons.

To all other divisions and clubs, the VK1 Division throws out this challenge — the club which contacts VK1WI on the most number of bands (which must include at least one VHF or UHF channel) will become the VK1 WI Club in 1986. In the event of a tie, the club whose Field Day Station was the furthest from the VK1 WI site will be the winner. The inaugural winner of this most coveted award will receive a handsome certificate attesting this feat, and publication attesting this fact in this column as soon as possible after the contest. I hope to hear and work as many of you as possible on the weekend.
THANKS TO EDUCATION

During 1985, I passed the Novice and Full Call examinations and just wish to pass on my appreciation of the assistance given by the WIA, especially to Brenda VK3KT, the Federal Education Officer of the WIA for her promptness re test tapes, test papers, etc and also her encouragement. A lot of thanks for the NSW CW Sessions, which were great, and I will still make use of them in the future to keep my hand in.

Cheers.

Garnet Freer VK2CQF
17 Old Bar Road,
Old Bar, NSW. 2430.

CONGRATULATIONS FOR WIA 75 AWARD

May I congratulate those responsible for the creation and dispatching of the WIA 75 Award? I made many enjoyable QSOs that would not have otherwise eventuated.

On many occasions those who did not need numbers were only too happy to volunteer them. Despite those who would tell us otherwise, the spirit of amateur radio is very much alive and well, and the WIA 75 Award has ensured that this spirit endures.

I look forward to my next 25 years in amateur radio, when I hope I will have pleasure in gaining the WIA 100 Award.

73.

Con Carlyon VK4BID
18 Erbacher Street,
Toowoomba, QLD. 4350.

TERMINOLOGICAL ERROR

In reference to Amateur Radio, January 1986, Page 37. Galileo was primarily known as an astronomer and not an astrolab. There is a difference between the two titles.

Keep up the good work. Look forward to future ARs.

Eddie Calleja VK3EE
26 Donald Street,
Morwell, Vic. 3840.

NOTE: Apologies for the error. However, in Galileo's time the distinction may not have existed. Ed.

1 Freedom of choice (within the licence conditions).
2 Allegiance only to the, non-aligned, licensing authority.
3 No discrimination between amateurs.

The comments in your editorial, and the latest Call Book in regard to WIA membership and the use of open facilities are blatant examples of the world-wide trend by organisations like the WIA to promote discrimination within the ranks of the Amateur Radio Movement, in order that these organisations may gain finance and power with which to destroy the original concepts of the Amateur Radio Movement.

Organisations like the WIA, NZAR, RSGB, ARRL etc, should understand that they are sub-servient to the Amateur Radio Movement. These organisations exist only to assist the Amateur Radio Movement. They are not there to encourage division or discrimination by the use of moral pressure.

If a private organisation, like the WIA, decides to provide open facilities, they are doing so with their eyes open! They should not expect, or pressure, non-members to support their projects.

Members to the Amateur Radio Movement should in no way feel obliged to be a member of any organisation. The Amateur Radio Movement is premier. The only prerequisite is a legitimate amateur radio licence.

Tony Tegale VK3QQQ,
38 Wattle Drive,
Watsonia, Vic. 3087.

NOTE: Since Tony's criticism is aimed at the January editorial, a reply to this letter is made in this issue's Editorial Comment. Ed.

HERMIT HURTLE

As many amateurs know, my husband VK5HW passed away on the 13th December, after a long illness.

Whilst going through some things in his shack I came across a sort of poem which I, and some of his friends believe he wrote himself. I think that through years of frustration of not being able to do as much as he would have liked and having to give up smoking because of his illness, urged him to put some thoughts onto paper.

Yours sincerely,

Jean Watson,
86 Glyde Street,
Albert Park, SA. 5014.

HURST THE HERMIT.

Old Hurtle Watson's cashed his chips
No more he'll go on hypnotic trips
And no more smoke will pass the lips
Of Hermit Hurtle Watson

Till the day he cashed his chips
The world was at his fingertips
While words drewled slowly from the lips
Of Hermit Hurtle Watson

He drank the Hurtle's no more slip
The brew of tea he called Sheep Dip
Nevermore he'll crank the pot
Or stoke the fire to keep it hot

I wonder that the bootstrap, rot
Of that old Hurtle Hermit Club

No relatives with reddened eyes
Willweep at Hurtle's sad demise
No lowered flag at half-mast flies

To Honour Hurtle Watson.
We'll miss perhaps his ugly dial
His raucous voice and drawing style
We'll miss him for a little while
Forget then Hurtle Hurst

Perhaps somewhere someone will wait
In Europe, Asia or Kuwait
Listening in to hear their mate
Absent Hurtle Watson.

I'd like to think some tears might fall
For Hurtle's ilk no hoppers are
Who make that almost a trick call
Unmourned like Hurtle Hurst.

AR

THE OLDEST

I note that VK3CKC states that the Victorian Railways Institute Wireless Club is Australia's oldest radio club, see AR January 1986, page 14.

I would like to correct that impression. As patron of the Waverley Amateur Radio Club, I have a copy of the complete DOC file on the licence, VK2BV, ex-A2BV, ex-N249, which states the first licence was issued to the Waverley Club on 18th August 1920. This was pre-dated by the formation of the Club in March 1919.

This is confirmed by the original sponsor of the licence, Gordon Thomson VK2AVT, who holds AOCP licence number three. The Waverley Club has been continuously licenced for over 65 years, and is the oldest non-WIA radio club in Australia.

Duane Foster VK2VE,
6 Box 425,
Randwick, NSW. 2031.

Thanks for bringing this to our attention, Duane.
(See page 64, AR November 1985 for a brief history of the Waverley Club.) Ed.

THANKS FROM THE WAR MEMORIAL

In 1984, the Wireless Institute of Australia launched a nation-wide appeal on behalf of the Australian War Memorial, for military wireless equipment.

The response was overwhelming, and I would like to thank everyone responsible for this success.

One of the items received as a result of the appeal was an ARQ receiver. The ARQ receivers were built by AWA during the second world war and were used extensively by the RAAF, the RAN, and the Australian Army.

Our receiver is in exceptionally good condition and it appears it could be made serviceable, given the appropriate power supply unit. I would be grateful therefore if any readers can assist us in this regard.

Thank you once again for the generous cooperation from members.

Yours faithfully,

Mark Clayton,
Curator, Aircraft & Technology for Director,
Australian War Memorial, Canberra, ACT. 2601.

AR

COPIES OF FOOD RECIPES!

I would like to draw attention to an advertisement in the For Sale-NSW Column, page 64 of Amateur Radio, January 1986, which advertises the VK Amateur Radio Cook Book.

Myself and another amateur had spotted the advertisement and, as we are both keen home- brewers, and the fact that the advertisement appears in the illustrious WIA Journal, we sent for a couple of copies of this so-called amateur Cook Book. Imagine our disgust and anger when we received copies of food recipes.

I do not wish to see the WIA or its Journal become de-graded and most of all, I do not want to...
see WIA members cheated or discouraged from home-brewing. I love my hobby and will do my very best to protect it from those who would drag it into the mire.

What is more than anything is that an amateur radio operator (for his or her call sign appears in the advertisement and the WIA Call Book) would stoop to such low tactics, I just hope that the WIA and its Journal will do their duty and let the members of what to expect from the above-mentioned advertisement, before they find they have no members left to warn.

Yours sincerely.

Glyn Gibbons
Johns VK2DJV,
144 Malitland Street,
Bingarrna, NSW, 2404.

DISCUSSION PAPER

I was pleased to see the discussion paper by Jim Linton and Roger Harrison proposing a Digital Class of amateur licence.

If our hobby is to survive, we need the youth of today. With digital techniques such an important part of today's world and every person exposed to the micro-computer, I believe that their quest for knowledge could be enhanced by involvement in amateur radio.

The secondary school science course of today gives a good basic understanding of electronic and digital principles and some exposure to amateur radio may be seen as an extension of their technical progression.

A digital licence may sound revolutionary, but so did AM and SSB modulation, FM repeaters, AM and SSB modulation, FM repeaters, satellite communications, RTTY, etc when they were first introduced on the bands. Let's face it, if it was not for SSB, electronic Morse and RTTY, many bands we enjoy today would not even be in the air today.

The doomsday people said the Novice Licence would lead to the worst aspects of CB radio becoming evident on the bands, but instead, most amateurs have maintained the traditions of our hobby.

Today our growth rate has slowed again to zero. As before, we ask, "What can be done?" Today only one out of ten amateurs who have maintained the traditions of our hobby.

Today, you cannot tell a Novice from a Limited, a Full or even an Extra. All operators in Amateur Radio, which has traditionally been the forefront of new technology, is being left to flounder as the rest of the world moves into the 21st century. So let us support the proposed licensing update and move amateur radio into the 21st century where it may have some appeal to the youth of today.

Yours faithfully,

Peter O'Keefe VK3YE
PO Box 654,
Shepparton, Vic. 3830.

HAVE YOU OLD PARTS?

This letter is a request for help in a little project I wish to undertake. I want to build, for my own pleasure, a crystal set. This is easily done these days, the kits are available off the shelf in many places. However, I want to build mine as a home-brewer would have done in the days when the Cat's Whisker was the way to a new and wonderful form of entertainment. I want to utilise components that might have been available then.

Since this magazine has been around for many years, I hope to tap the expertise and advice and parts, from some of the "Old Time Members".

I look forward to any response.

Yours faithfully,

Dave Nicholls,
15 Dart Street,
Boulder, WA. 6432.

AMATEUR RADIO — FUTURE?

Amateur radio evolved from the AOCP only, to include, in 1959, the limited licence and, in 1977, the full licence (Extra). Each of them is for those who have maintained the traditions of our hobby.

Today our growth rate has slowed again to zero. As before, we ask, "What can be done?" Today only one out of ten amateurs who have maintained the traditions of our hobby.

As for the reducing of operating standards, I have noticed very little change in the last 25-years.

Amateur radio, which has traditionally been the forefront of new technology, is being left to flounder as the rest of the world moves into the 21st century. So let us support the proposed licensing update and move amateur radio into the 21st century where it may have some appeal to the youth of today.

Yours faithfully,

Peter O'Keefe VK3YE
PO Box 654,
Shepparton, Vic. 3830.

CONGRATULATIONS

May I congratulate the Editor of Amateur Radio on his powerful and timely Editorial in January's AR.

Dick Richards VK4UG
12A Savannah Street,
Redcliffe, Qld. 4020.

EVERYBODY HAS HEARD OF EMI, BUT WHO HAS HEARD OF SMI?

The following item appeared in the September 1985 issue of the South African Shortwave Listener, and later in the November 1985 issue of DX Post.

A problem has shown up on the amateur bands. It is SMI. During a OSO Don Grant KR6J was having with Glen Turner NF7T, in Seattle, Washington, he received a call to the phone. His neighbor called, saying 'I think the rabbit (a pet) in my home, as her husband was working out of town) heard a man's voice coming out of her Electronic Sewing Machine.

He said it was a little scary until she figured out whose voice it was. Glen was coming in loud and clear, she said, but not to worry. With his beam pointing right over her house to talk to southern California, she had a freaky listen to a QSO while she did her sewing! How nice some neighbours can be!
Obituaries

TOM MANKS VK3TZ

It is with deep regret we record the passing of —

Mr Malcolm Brown VK2AQB
28th December 1985

Mr Frank Carroll L3038
20th December 1985

Re V H ELLSON VK3DRQ
19th December 1985

Mr John Hay VK2DTF
1st November 1985

Mr E W Jinks VK2ADJ
12th November 1985

Mr R J Marriott VK3SI
20th August 1985

Mr P A Mcartney VK2DCS
27th July 1985

Mr E M Simplicio VK2ES
21st June 1985

Mr George Turner VK3GN

Mr M I Upson VK7NMQ

he opened a radio business in Oxford Street, Woolloongabba, having an agency for Swan and Helicrafter Amateur Radio Equipment. The shop was a "mecca" for many amateur radio amateurs. He was first licenced in 1952 as VK3FA.

Horrie served for a time on the NSW Division, TVI Committee and was also keen on the "cabinet". Retiring in 1971, Mr Horrie moved to Berkeley Vale on the central coast and soon had an excellent antenna system on HF, VHF and UHF.

Horrie had many friends world-wide and I consider myself fortunate to be among them.

He had a daily ached on 7MHz and 21MHz and latterly on UHF for over 19 years. He will be greatly missed by all his friends and listeners.

-Gordon Thomson VK2AVT.

GEORGE TURNER VK3GN

It is sad to report the sudden passing of George on 16th October 1985, whilst he was visiting Swan Hill.

George, who was in his 72nd year, became interested in radio, as he said, one magic day in 1924 at Myrtleford, through his brother Charles VK3ADJ, listening to amateur stations on a one valve set.

Horrie, an Assistant Projectionist, embracing the surrounding country areas. Eventually, he joined his parents in Maryborough and was attached to the Paramount Theatre. He attended the technical school for his Projectionist Licence.

He became firm friends with John O'Hare VK3BO (later 3OH), and was his second operator on the 200 metre band. Clive Holland and George decided to sit for their amateur licences in early 1937. Both passed on the same day.

In 1938, George was appointed projectionist at the new Midland Theatre, in Ararat. He stayed at my home until he had settled into the area.

A highlight of the 1940s was his participation in the Third Post War Western Zone Convention, with others, he helped set-up a wireless receiver a resident there has been fined four pounds.

Joe Brown VK7BJ, presented a framed photograph of a sewing machine which was to be awarded annually to the most loquacious member of the group. For the past three years, a barbeque has been held at the home of Bill VK7NWR, where the UHF licences are awarded. The winner is the sole judge of the recipient for the next year. The current holder is Owen VK7OL.

-Oakley - 1985

WE NEVER HAD IT SO GOOD!

"We understand that Mr Garner-Jones, Headmaster of the Levuka Public School, has been permitted to erect a wireless station at Levuka for the benefit of his pupils.

"We are quite in sympathy with this concession and we must congratulate Levuka's progressive headmaster on the achievement, but we cannot quite understand the attitude of the Government in refusing licences to those who are desirous of experimenting in the same line."

"It is reported from Lautoka that for erecting a wireless receiver a resident there has been fined four pounds."

So said the 'Fiji Times' on 19th September 1911.

Harry Cox VK4OX, was reading through the 'Fiji Times' Centennial Supplement, 4th September 1969, the story came across the preceding article. Harry comments "The written word should make all amateurs of all categories be truly thankful to the WIA and pioneers for what we have today."

It may be of interest to cricket-loving amateurs, from the same paper, Radu Kadavu Levu and his Bau brother were allowed, by the WIA, to form a cricket club, to be a successor to a cricket match held in Victoria. Kadavu was confident of victory against all-comers. This article was dated 29th June 1907.

THOUGHT FOR THE MONTH...

Minds are like parachutes — they only function when open.

Sewing Circle Story

Bob Jackson VK7NBF
Falmouth House, Falmouth, Tas. 7215

The Tasmanian Sewing Circle is not what it seems. For one thing there is not a needle or reel of thread in sight. But, there are Morse keys, valves and aerials aplenty.

This name is a long-standing 'nickname' for a group of about 50 dedicated amateur radio enthusiasts, mostly retired men, who get together each week to discuss their latest adventures. The more adventurous come from all over Tasmania and their conversations cover almost every subject imaginable.

The Circle began in 1902, when the late Jack Batchelor VK7JB, and his friend Snowy Harrisson VK7CH, maritime mobile on the MOORINA, had daily conversations on 80 metres. The mode used was CW (it had to be as Snowy sweats that he does not own a microphone, even to this day).

Jack used an Army 122 set.

They were soon joined by the late Bob O'May VK7CM and others, both the mode changed to SSB when Snowy was not on the net. They earned their nickname one evening when the session delayed the Batchelor's mailman. Jack's wife, Joy VK7YL, said that the men reminded her of a sewing circle at school — a select group of students who were allowed to talk as they sewed. Jack protested that it was a strange comparison for a bank manager, accountant and an Army officer. However, despite his protests, the name stuck and is still in use to this day.

In 1981, Joe Brown VK7BJ, presented a framed photograph of a sewing machine which was to be awarded annually to the most loquacious member of the group. For the past three years, a barbeque has been held at the home of Bill VK7NWR, where the UHF licences are awarded. The winner is the sole judge of the recipient for the next year. The current holder is Owen VK7OL.

Reference material The Southern Star

QSP
AIMING HIGH WITH COMMUNICATIONS ACCESSORIES FROM GFS

WAY OUT FRONT IN AIRBAND PORTABLES THE NEW ATC-720X

- BALLOONISTS
- AERO CLUBS
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Continuous Coverage 25-350, 800-1800 MHz Scanner

If you want continuous coverage, AM/FM, wide & narrow with 20 memories we suggest you choose the AR-2002 from GFS. $739.00 + $14 P&P

LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE

Loss in dB/30 METRES

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VHF-UHF SWR POWER METER

MODEL HB-370B

Mobile mount 130-450 MHz, detachable pick-up head, 100W CW, 200W PEP, illuminated meter.

ONLY $99 + $3 P&P

HF 5 BAND VERTICAL

Self supporting and complete with self supporting radials. Mexico $277 + $14 P&P

NEW DEBEGLASS WIRE

Now, give your tower without having to break the wires with dozens of egg insulators or worrying about them corroding away due to a salty atmosphere. Our Debeglass wire alternative is made using continuous filament fiberglass yarn, jacketed in UV stabilized vinyl chloride. Compare the figures below.

DB-4 (4mm): $55, DB-5 (5mm): $70, DB-6 (6mm): $130. Debechop termination clip to suit DB-4, DB-5, DB-6 $4.95 each. Debechop termination to suit DB-5, DB-6, $1.50 each.

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Apart from being extremely versatile, the MFJ-941B includes a 6-position coax-switch, SWR power meter, 41 Balun and will feed balanced line, single wire and coax fed antennas. $334 + $14 P&P

2 KW DUMMY LOAD

MFJ-250 Low Swr to 400 MHz, 2 KW PEP, supplied with transformer.

$99 + $14 P&P

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RF NOISE BRIDGE WITH COMMUNICATIONS

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6-POSITION COAX SWITCH

6-POSITION COAX SWITCH

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A high performance RTTY/CW modem kit for use on a computer or terminal. Offers high noise immunity on receive $142 + $8 P&P (kit) or $199 + $14 P&P (assembled).

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A versatile RTTY/CW modem interfaces with computer and a supported software for V 20 or Commodore 64. $345 + $14 P&P

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SOLAR GEOPHYSICAL SUMMARY

OCTOBER 1985

Solar activity was low throughout the month with the exception of 26th October, when there was a single M1.8 solar flare. Prior to 15th October, the sun was mostly without spots and the 10cm flux was at low levels. After 15th, two regions began to grow rapidly and the flux rose rapidly to a peak of 95 on 22nd and 23rd. The growth of these regions culminated in the flare on 26th. Both regions were 95 on 22nd and 23rd. The growth of these regions was mostly without spots and the 10cm flux readings were: 1, 2 - 67, 3 = 69, 4 = 68, 5 = 67, 6 = 66, 10 = 67, 11 = 68, 12 = 67, 14 = 70, 15 = 72, 16 = 74, 17 = 75, 19 = 78, 20 = 80, 21 = 86, 22 = 85, 24 = 84, 25 = 52, 26 = 85, 27 = 80, 28 = 78, 29 = 75, 30 = 72, 31 = 71. Average was 74.8. Sunspot average was 18.5. Running yearly sunspot average was 17.8 for 4/85.

GEOMAGNETIC

4-8 October. The geomagnetic field became disturbed after 1900 UTC on 4th and reached storm levels early on the 5th and remained at storm levels until the end of the 6th. It was generally active on 7th and 8th. A = 15, 42, 33, 21
11 October. The field was at active levels A = 17.
29-30 October...The field was at active levels A = 16.
15-18 October. The field was at active levels with the most disturbed periods being 0200-0900 UTC on 15th and 0000-1300 UTC on 16th A = 20, 16, 17, 18.
22 October. Field at active levels A = 10. The quietest days were 1 = 2, 26, 27 = 3, 28, 30, 31 = 4, 2, 20 = 5, 10, 24 = 6.
The principle feature of the month was the intense magnetic disturbance on 5th and 6th.

SOLAR GEOPHYSICAL SUMMARY — NOVEMBER 1985

Solar activity continued at a low level. Two regions produced a slight chance of activity after the 10th. Both regions decayed as they crossed the disc and rotated off around 23rd. The 10cm flux was enhanced during the passage of these regions across the disc. The peak flux value of 66 was reached on the 15th. The sun was spotless from 1st until the 4th, then 23 until the 30th. For these periods the 10cm flux was in the low 70s.

10cm flux readings were: 1, 2 = 70, 3, 4 = 69, 5 = 70, 6 = 71, 7 = 73, 8 = 75, 9, 10 = 74, 11, 12, 13, 14 = 76, 15 = 78, 16 = 86, 16 = 81, 17, 18 = 79, 19, 20 = 78, 21 = 76, 22, 23 = 75, 24 = 74, 25 = 72, 26 = 71, 27 = 72, 28, 29, 30 = 71. Average was 74.3. Sunspot average was 17.8 for 5/85.

IONOSPHERIC I INDEX

This index, a measure of the average level of the ionospherical critical frequencies available on a particular day — the higher the value of the I index, the higher the ionospherical critical frequencies (and maximum usable frequencies on HF circuits) for that day. The index is based on data from Australian ionospheric stations and so is most applicable to HF circuits with reflection points in the Australian region. They do not appear in the recorded information available on (02) 269 8614, VK2WI, during it's Sunday Broadcasts, give a weekly summary along with the 10cm flux and A indices for the previous week.

For November they were: 1 = -14, 2 = -17, 3 = -21, 4 = -30, 5 = -28, 6 = -12, 7 = -18, 8 = -16, 9 = -11, 10 = -16, 11, 12, 13, 14 = -15, 15 = -29, 16 = -18, 17 = -14, 18 = -7, 19 = -2, 20, 21 = 9, 22 = -4, 23 = -3, 24 = -8, 25 = -9, 26 = 5, 27 = 17, 28 = -2, 29 = -18, 30 = -81 — an average of 3.4.

IPS comments were: F2 critical frequencies were generally depressed far below IPS predicted values for the month. Due to the combination of low solar flux values early in the month the extended period of slightly disturbed magnetic conditions. The rise in the solar flux which was associated with the growth of the two regions on the sun produced a general rise in the conospheric F2 critical frequencies towards the end of the month.

The Southern Hemisphere appears to have been affected by the magnetic disturbances to a greater extent than the Northern Hemisphere. Critical frequencies for the Southern Hemisphere have been mostly lower than equivalent northern values.

From data supplied by Department of Science, IPS Radio and Space Services.

Be part of Today!

When we analyse the recent past and project the immediate future, computers and communications technologies play a vital part, but we must avoid the tendency to look only to the hardware level. The fact that technologists have appropriated words like ‘communications', 'information' and 'data' and given them electronic rather than social meanings, should not disguise the fact that in the final analysis, communications involves people and ideas, not electronic bit and bytes.

People and Ideas... that's the side of Australia's Communications Revolution we tell about in this informal look at today's world of computers and telecommunications.

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Bill the Author

Bill was standing outside his front gate, looking anxiously along the street. It was about time the postman turned up with the latest issue of AR. He had to stand and wait for the postman because his letter box had fallen down and then been run over when Bill was backing his Holden out one day. He hadn’t got around to fixing it.

The postman arrived on his bike and gave Bill some mail. It included AR. Bill tucked some letters into his back pocket and meandered into his shack for a quiet mail. It included AR. Bill was standing outside his front gate, looking anxiously along the street. It was about time the postman arrived on his bike and gave Bill some mail. It included AR. Bill tucked some letters into his back pocket and meandered into his shack for a quiet mail. He had always looked forward to his magazine and today was no exception. He settled down, cool tin at his elbow, and started.

What was this? Computers again! There seemed to be more articles about the blessed things. Didn’t they know that he wasn’t interested in computers? Where were the articles about building things from junk boxes? What’s all this about Packet Radio? Not to mention the satellite business. It was enough to drive any reasonable man to drink!

Bill sipped thoughtfully. It was about time they realised that this couldn’t go on. He decided to write a letter to the Editor about it. He hunted around until he found a fairly clean piece of paper and then sat down and thought.

"Dear Sir, or Whom it May Concern", he wrote. No, that wouldn’t do. He crossed it out.

"Dear Sir", that wouldn’t do either. The Editor could be a woman. You never knew; they seemed to get into everything these days. He crossed it out again.

Ted Holmes VK3DEH

20 Edmonds Street, Parkdale, Vic. 3195

"Dear Sir or Madam". That would do. I wish to bring (cross out) draw your attention to the fact that your magazine is getting (cross out) becoming more and more addicted (cross out) involved in printing articles about those damned (cross out) internal (cross out) computers. I should (cross out) would like to tell (cross out) let you know that I have been very interested in the things. Could (cross out) I request that more articles are printed about things that interest real people" — Bill liked that bit — “and not a minority of boffins. I remain, Dear Sir or Madam, whatever the case may be, William Bitheringwit, Licence Holder of many years standing”.

Bill read it through. Of course, it was only a rough draft, but it read well. It was about time somebody put a word in about this sort of thing. He took another sip at his can. Perhaps he could write an interesting article himself. After all, he had many years experience which he could share with others less knowledgeable people and, in this way, could guide them along the right track. He made a mental note to get hold of an old typewriter.

Mrs Bitheringwit then yelled at him from the kitchen. Something about some letters. In the interests of peace, Bill hastened out to find out what she wanted.

The breeze of his passing caused his composition to float off the desk and descend to the cluttered floor, where it remained unnoticed. Bill then totally forgot about the whole idea.
A Call to all
Holders of o

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Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details: eg Name, Address, Telephone Number; or both sheets. Please write for your Hamad as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers.
* Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members.
* Copy in typescript, or block letters — double-spaced. QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hams submitted from members who are found to be in the general electronics retail and wholesale distributive trade should be certified as referring only to private articles not being resold for merchandising purposes. Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof).

Minimum charge — $22.50 pre-payable. Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiving & Transmitting Applications. For data & price list send 105x220mm SASE to: HWANTED - NSWE

TRANSMISSION KIT: see p. 64.ordinary Hamads submitted from members who are found to be in the general electronics retail and wholesale distributive trade should be certified as referring only to private articles not being resold for merchandising purposes. Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof).

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Minimum charge — $22.50 pre-payable. Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.
The TS-940S is a competition class HF transceiver having every conceivable feature, and is designed for SSB, CW, AM, FM and FSK modes of operation on all 160 through 10 meter Amateur bands, including the new WARC bands. It incorporates an outstanding 150 kHz to 30 MHz general coverage receiver having a superior dynamic range (102 dB typical on 20 meters, 50 kHz spacing, 500 Hz CW bandwidth).

The TS-430S combines the ultimate in compact styling with its counterparts in advanced circuit design and performance. An all solid-state SSB, CW and AM transceiver, with FM optional, covering the 160 — 10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150 kHz — 30 MHz general coverage receiver having an extra wide dynamic range.
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Band Plans for VHF & UHF
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WH532
Circularly Polarised Wave; High performance using High Quality Materials.
Since the maximum gain of the transmission antenna on 430MHz is 13.4dB, and the maximum gain of the reception antenna on 144MHz is 12dB, top reception is achieved without the use of a preamplifier.

<table>
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<tr>
<th>Items</th>
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<td>10, 12dB</td>
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<td>F/B</td>
<td>16.5, 18.3dB</td>
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<td>Impedance</td>
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<td>Withstanding Power</td>
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<tr>
<td>Weight</td>
<td>Approx 8.7kg</td>
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<tr>
<td>Length</td>
<td>3.68m</td>
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</tr>
<tr>
<td>Radius of Rotation</td>
<td>Approx 2.6m</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>N-Type</td>
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</tr>
</tbody>
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50TS
Frequency Range: 50-54MHz; Gain: 71-79dB, VSWR Zo=50Ω: 1.1-1.5: Front-to-Back Ratio (F/B): 14.4 — 20.4dB: Beamwidth: 50pi9021 — 56pi9021: Impedance: 50; 75Ω: Withstanding Power: 50W: Weight: 3.9kg; Length: 4.32m; Width: 3m; Radius of Rotation: Approx 2.56m; Wind Load Area: 0.36m²: Applicable Mast: Ø 32 — 60.5mm; Applicable Cable: SD, 60, SC, 7C.

Bend-over Type

144PWL

435PWL

MODEL | Frequency (MHz) | Gain (dB) |
--- | --- | --- |
144PWL (2-Band Type) | 50 - 54 | 2.2 - 3.2 |
435PWL (2-Band Type) | 430 - 440 | 5.1 - 5.5 |

Withstanding Power: 100W
Weight: Approx 1.3kg
Length: 0.32m
Radius of Rotation: Approx 1.5m
Wind Load Area: 0.17m²
Applicable Mast: Ø 32-60.5mm
Applicable Cable: 6D2V, 10D2V

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For most people, viewing Halley's Comet is a 'once-a-lifetime' experience as it only appears every 76 years. This month, April, is expected to be the best time to view this legendary Comet. Will it affect radio propagation? Will the moonbounce operators be able to bounce signals from Halley's Comet? Each time it re-appears technology and science is a little more advanced and technical people are able to learn a little more about it. 1758 was the first time the Comet's return was scientifically predicted. High quality telescopes were used to make accurate drawings in 1835, and in 1910 it was photographed in detail by high-powered telescopes. This time several spacecraft probes. The artists impression of interplanetary probes, Suisui and Sakigake, are featured on this month's cover whilst on page 5, there is the article Halley's Comet — will we see it?

In Novice Notes, page 20, Drew VK3XU, has designed a nifty little four watt transmitter for 80 metre CW. Drew has approached this transmitter from two angles — in semi-kit form or construct it from the ground including making the PCBs yourself. In the kit-form the unit is very cheap and Drew is very interested to hear what readers think of this approach to simple construction.

For the VHF UHF enthusiasts, page 24 features the Band Planning for your frequencies, whilst in the regular VHF UHF column there has been a new world record set for the 3.5GHz band by two Australians. Congratulations to Reg VK5QR and Wally VK6WG.
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Page 2 - AMATEUR RADIO. April 1986
Editor's Comment

BITS AND PIECES

The above title is a phrase beloved of an old friend of mine who recently succeeded in jumping the five words-per-minute hurdle after 27 years and graduated from a Z to a K call. He probably will not want to be identified here, but he will know to whom I send congratulations! By bits and pieces he sometimes meant things like resistors or nuts and bolts, but more often a collection of unrelated items all of some interest at the time. That describes this editorial very well. I think I have said before how impressed I am by the ability of newspaper columnists to come up with something of substance every day. And like some of those columns this month's offering is a collection of unrelated bits.

One thing that has stirred many to comment over the last few weeks has been the article by Jim VK2PC and Roger VK2ZTB, which we published in February. Some are for, some against. Some are critical of the manner of its publication. But it must be made clear that it is only a discussion paper. Its purpose is to provoke comment and discussion. It is not WIA policy. Some, particularly, most of its arguments will be discussed, formally or otherwise, at our 50th Federal Convention later this month. Some may become Institute policy this year. Or next year, sometime, or never. It all depends on the opinions of you, the members. Tell your Divisional and Federal Councillors about your opinions. They may be experts in telegraphy or telephony, but probably not telepathy!

I had hoped by now to have written an account of the very enjoyable trip my wife and I made last year to VK4 and VK8. Rest assured, amateurs of Cairns, Darwin, and elsewhere, that it will be done eventually. Time is the problem. Incidentally, I hope Cyclone Winifred did not change Cairns too much from the August account.

We have announced in the last two months the winners of the four main Federal Awards. Two were endowed by Alan Shawsmith VK4SS and Ron Higginbotham VK3RN. A third was set up in memory of the late Ron Wilkinson VK3AKC. The fourth is the Publications Committee Technical Award. It has become obvious that these awards are not as well-known as they should be. In fact, they have been won from time to time by people who did not even know of an award's existence until they had won it! We will try to make them better known by a series of articles during 1986 in which the history and purpose of each award will be covered. All but the Ron Wilkinson Award are judged on contributions to this magazine over a calendar year. As the Sage of Oz said years ago You've gotta be in it to win it! so let us have your technical or general interest articles to include in the list. Some Divisions also make awards to authors of Amateur Radio articles. You may never win a Nobel Prize, but how about a WIA Award? Over to you.

Bill Rice VK3ABP
Editor
AR

Hobby on a Table

Allan Williams VK2FH has seen a big change in technology. Two years ago Allan was using thousands of dollars worth of equipment which filled a room, today his electronic equipment fits on a small table.

Allan became interested in radio during his primary school days, and continued through to today. And like some of those columns this month's offering is a collection of unrelated bits.

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Bill Rice VK3ABP
Editor
AR

Hobby on a Table

Allan Williams VK2FH has seen a big change in technology. Two years ago Allan was using thousands of dollars worth of equipment which filled a room, today his electronic equipment fits on a small table.

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The TS-440S is an HF transceiver designed to condense every conceivable feature for SSB, CW, AM, FM and AFSK mode of operation on all Amateur bands in compact package. It is the ultimate compact size with the automatic antenna tuner built-in and featuring a highly efficient final amplifier cooling system. It incorporates a 100 KHz to 30 MHz general coverage receiver having superior dynamic range.

**All-Mode Operation**

Mode selection USB, LSB, CW, AM, FM or AFSK is quickly accomplished through use of front panel mode keys. International Morse Code confirms to the selected mode.

**Super Receiver Dynamic Range**

The receiver front end has been specifically designed to provide superior dynamic range. The IM dynamic range is 102 dB, with an overall intercept point of 15 dBm, noise floor level of -138 dB. (An optional 500 Hz CW filter YK-88C installed).

100 memories store frequency, band and mode 100 memory channels allow storage of frequency, band, and mode information, providing increased convenience with simplicity of operation.

**Dual programmable band scan**

Allow selection of the desired frequency groups to be scanned. Both groups may also be scanned, one after the other.
HALLEY'S COMET — WILL WE SEE IT?

Depicted on the front cover is Halley's Comet, a phenomenon not witnessed for three quarters of a century. When last seen, there was not the sophisticated equipment and resources that are available today to track it and find out just that little more about it.

The cover design depicts the on-going global research program that Japan's Institute of Space and Astronautical Science has instituted and features the two inter-planetary vehicles that were sent to welcome Halley to our viewing. The probes named Sakigake meaning Pioneer and Suisei meaning Comet were due to intercept the Comet last month, shortly after its closest approach to the sun.

The duties of these deep space probe explorers was to gather invaluable data on solar winds, waves of plasma emitted by the sun and its effect on the Comet. Suisei, (or Comet) is intended to reveal the three dimensional structure of the hydrogen cloud surrounding the coma with an ultra-violet television camera which will beam the images back to earth from a distance of up to 170 million km away. No mean effort!

Sakigake and Suisei were launched to gain more knowledge of this rare visitor. The USSR, NASA and others have also sent vehicles into space in the hope of gleaning a little more knowledge of this phenomenon. The 64 metre Parkes radio telescope, in New South Wales, will be a sole receiver to a probe launched by the European Space Agency.

All the information gathered will be available to eagerly awaiting scientists world-wide.

Dr Robin Hirst, Curator of Astronomy at the Museum of Victoria, in collaboration with Dr Denis Coates, a Senior Lecturer in the Department of Physics at the Monash University, have graciously allowed me to use extracts from their book Halley's Comet - an Australian view 1985/1986, which I recommend to all readers for a concise review of this history-making event. It is obtainable from the Melbourne Museum Bookshop for $2.95 plus postage and packing.

HALLEY

Halley's Comet was first recorded in 240 BC, when it was recorded in Chinese records, but it was not named until 1758. Edmond Halley, a keen English astronomer, later Astronomer Royal, was in his mid twenties, when he plotted the orbit and correctly predicted the Comet's return in 1758.

It was sighted in 1758, by an amateur astronomer, Johann Palitzsch, confirming Halley's prediction, and the Comet was subsequently named after Edmond. To this date there have been 30 recorded return sightings including those of two astronomers who working at the Hale Telescope on Palomar Mountain, when the Comet was detected whilst some 1600 million kilometres from earth in 1982.

Halley's Comet is a fluffy, dusty snowball about 10 kilometres across and is part of the Solar System, trapped by the sun's gravitational pull. Its distance from the sun
It began its present return trip towards the sun in 1948, travelling at about 3,000 kilometres per hour. At this time, the Comet was just a nucleus of deeply frozen dust and ice, with a temperature of about -200 degrees Celsius. As it approaches the sun it gradually warms, and the ice turns to water vapour. Other ices in the Comet, such as methane and ammonia, also evaporate.

The Comet is now surrounded by a cloud of vapour and gas mingled with dust, forming the Comet's coma. This coma can reach nearly a million kilometres in diameter. Also two tails form - the dust tail formed when the rocky dust in the coma is pushed away from the sun, and the ion tail which consists of electrically charged molecules from gas in the coma.

Usually these tails point in different directions, however, on this visit, it will be difficult to see them separately.

Each passage of Halley near the sun removes a one-metre layer of ice and dust from the surface of its nucleus. Most of the lost material is strewn along the Comet's track and the lightest particles are eventually pushed completely out of the Solar System. These particles stay spread along the track, with the result that when the earth passes through the dust trail twice a year, some of the particles enter the atmosphere, which in turn produce meteor showers. Halley's showers occur in early May (the Aquarids) and late October (the Orionids).

Halley's is only one of about 700 comets of which detailed information is known, but it is likely that 100,000,000,000 comets surround the sun in a vast cloud.

The Comet was first photographed in 1910. On this visit the earth passed very close to the Comet's tail and there were wild rumours that poisonous gases would have a disastrous effect. Some people plugged cracks in windows and doors to prevent the gases destroying them, whilst the more enterprising sold "comet pills" which would protect those...
The best time to view Halley will be during the second week of this month when it will be in the sky all night and its tail should be clearly visible and should not be affected by moonlight.

REQUESTS
It is requested that any unusual radio propagation or phenomena that is encountered during the sighting period be logged in UTC date and time and either forwarded to Denis or Robin, or to the writer who will gladly pass the information on to them to add to the scientific data that has already been received.

Another request is for anyone who sighted the Comet on its last orbit in 1910 and have seen it again to please advise the writer for publication so that it may be historically recorded for future generations.

THANKS
It would be impossible to list all who have contributed to this article but sincere thanks are extended to the staff of the Japanese Institute of Space and Astronautical Science, the Japanese Ministry of Education, the Consul for Japan and staff, NASA, ITU Magazine, Drs Robin Hirst and Denis Coates, the staff of the Museum of Victoria Bookshop and Ms Julie Lane of Quadriloco International. Sincere thanks to one and all and also those not listed.

The Parkes Radio Telescope will play an integral part in receiving information relayed by the interplanetary probe Giotto.

who swallowed them from the effect of the Comet.

WHEN CAN WE SEE IT?
According to the explicit diagrams provided by Denis and Robin and reproduced with their consent, the figures for viewers in the southern states can be easily read. A few simple calculations for those people, in the northern states, who luckily enjoy warmer weather will indicate their window for a view of a sighting before another 76 years elapse.

When the Comet is closest to the earth on this visit, during this month, it will be three times further away than during its closest approach, in May 1910, it will therefore appear fainter than it was in 1910.
TWO-RING HALO FOR SIX METRES

Bill Lochridge VK4WL
C/o Post Office, Thursday Island, Qld. 4875

During 1984, I read a magazine article describing the construction of a single ring, gamma-matched halo antenna. From my experience, this configuration, although providing an excellent radiator, was restricted in its use by its very narrow-bandwidth characteristic.

In the late 50s, a six metre, three ring halo was available on the American market and covered the 50-54MHz band. This antenna had an outstanding SWR which did not exceed 1.6:1. The Saturn 6, as it was called, was robust, very good for trimming trees (when used mobile!), but, importantly, it remained in-tune. It was, however, quite expensive. Unfortunately, I cannot recall how it was fed. With this background, one of my novice students and I set out to build a two ring halo.

The two ring halo is basically nothing more than a folded dipole bent into a circle, 508mm (20") in diameter, using capacitor plates at the open ends for tuning to resonance. A folded dipole has a feed impedance of about 300 ohms and to transform this value to 50 ohms, the upper ring is constructed of 20mm tubing, whilst the lower one is 8mm.

At this point, it is important to stress that in Cape York, northern Queensland, where the author lives, the nearest hardware store is about 800km away and the price of any item is three to four times greater than it would be in Brisbane. Fortunately, there is a very well-equipped rubbish-tip. Luckily, two 16m (6") lengths of 20mm and 8mm aluminium tubing were located there for about $11.50. Some 3mm plate was also found for the capacitor plates.

The next problem was to bend the tubing as there were no tree-trunks with a 508mm (20") trunk! A further search of the tip unveiled a 405mm (16") bicycle tyre rim. One end of the tubing was cramped in a vice, the tubing was filled with beach sand (there is an ample supply of sand around Cape York) then the other end was closed off, again with the aid of a vice. The tyre rim was then placed in the centre of the tubing and both were then clamped in the vice.

With the student on one end and the writer on the other the tube was bent around the rim, overlapping as far as was possible. When the tubing was released it sprang out to approximately the required size. (When one lives in the bush one learns to adapt!). All that remained to be done now was to pull the tubing apart to make a 508mm (20") OD circle and to cut and align the ends so that they did not exceed 1.6:1.

Two 114mm (4.5") capacitor plates were cut using a nibbler tool. The two tubes were set apart to make a 508mm (20") Od circle and to accommodate mounting them on the nylon block and for the direct connection of the 50 ohm coaxial cable. The larger ring was drilled and similarly mounted to the block.

The remaining block area was used to attach the antenna to a mounting pole of larger tubing. This particular halo is mounted about three metres above sea level on the writer's catamaran and has proved its worth over a vertical antenna when working stations using horizontally polarised beams.

Capacitor Plates and Rings ready for welding. A matchbox, placed on its end, provided almost perfect spacing.

Rings and Capacitor Plates. 63.5mm (2.5") centre-to-centre and holes drilled through the capacitor plates to accommodate the 20 and 8mm tubing (see photograph). At this time five additional holes were drilled in the plate so that nylon nuts and bolts could be used to adjust the distance between the plates. Blocks were then taped between the plates to enable welding of the plates to the tube by the local plumber for the princely sum of a "six-pack". The total cost of the antenna was $15.

All that remained to be done was to cut the small tubing for a feed-point and provide an antenna mount. The mounting block was constructed from a nylon cutting-board (also found at the tip). This block was cut to accommodate mounting them on the nylon block and for the direct connection of the 50 ohm coaxial cable. The larger ring was drilled and similarly mounted to the block.

The remaining block area was used to attach the antenna to a mounting pole of larger tubing. This particular halo is mounted some three metres above sea level on the writer's catamaran and has proved its worth over a vertical antenna when working stations using horizontally polarised beams.

Halo Rings and the Tyre Rim which they were bent on.

During 1986, I wasfortunate to be able to do some field testing of the two ring halo on the north-west tip of Cape York. Thursday Island tests were carried out with Arthur VK4IR and Col VK4ACG, in Weipa and also Brian VK4ZTI, at Thursday Island. The contacts ranged from about 40km to 60km with good signals both ways. It should also be noted that I was running 2.5 watts whilst Arthur and Col were using 10 watts with two element beams — no preamplifiers.

From Jackson River, contact was possible with Brian, who was operating portable on Thursday Island with a whip on its side. Even from the north-west tip of Cape York VK4IR was Q3 and VK4ZTI was Q5. Not bad for a mobile antenna!

THE TRIAL IS OVER

The trial for Jack Ravenscroft VE3SR, is over. Testimony was presented in January and observers felt the trial went well.

Jack, from Ottawa, was sued for $35,000 for allegedly interfering with a neighbour's microwave oven, furnace control and home entertainment equipment. During the trial, Canada Radio Relay League (CRRL) Director, Ray Perrin VE3FN, testified that Jack could not be held responsible for the interference. He compared the problem to rain entering a hole in the roof. There will always be rain. You have to fix the roof. The analogy was appropriate.

DOC personnel, who indicated that Jack's station was essentially clean and that Jack had been operating within the law, testified that even their own hand-held transceivers created problems for the plaintiffs' equipment.

The plaintiffs then produced a tape recording of a QSO between Jack and one of their transmitters. The embarrassment it was not transmitted by Jack, but was a transmission by another amateur operating a block and one-half away!
Ever had your solid state VHF rig close down its finals because of an impedance mis-match at the antenna? Many amateurs use antenna tuners or transmatches on HF, but few use such devices on VHF.

A design for an antenna tuning unit (ATU) suitable for the 144MHz band was published in the British publication HAM RADIO TODAY, December 1983. Graham Packer G3UUS, in his article entitled Wire Antennas on 2m — A practical Proposition? suggests their use with G5RVs and wire antennas, including Rhombics, long wires and multi-wavelength loops, as well as the more conventional Yagi type antennas.

A tuner constructed by the writer for a little under $30 has matched a long wire, a half wave on 27MHz and two metre verticals. With some modification, it has also enabled matching of the wire and 27MHz antennas to 50 ohm feed impedance, at 52 and 53MHz.

Construction is simple and can be modified by the constructor for his/her particular needs and source of parts. The original design had a half-wave length of coaxial cable placed inside the box as a balun, but this can be placed externally as desired.

Some difficulty may be encountered in obtaining suitable air-gap capacitors. It is possible to reduce higher value capacitors by removing plates to obtain the correct value. Should larger capacitor values be used, the tuning will be sharper and will result in practical difficulties in obtaining and maintaining a correct match, even on smaller changes of frequency change.

The following parts are required:
- One metal die-cast box — 150 x 80 x 50mm
- Four SO239 or BNC sockets (consider Type N — Tech Ed)
- Two insulated binding posts
- Two PL259 or BNC plugs (consider Type N — Tech Ed)
- 600mm RG58U
- Quantity of No 16 B & S enamelled copper wire (1.25mm diameter)
- Two air-gap 30pF variable capacitors
- Two knobs, screws, solder lugs, nuts, bolts, washers and pop-rivets

**CONSTRUCTION — refer diagram**

Mount all four sockets along one side of the box leaving about 15mm (0.6") between the second and third sockets for the two binding posts.

Pop rivets were used to attach the panel mounting sockets to the box on three of the four holes. The remaining hole used a nut, spring washer and bolt to securely ground the solder lug. Install the two binding posts between the sockets. Next, position and mount the two capacitors in such a way as to obtain the shortest practical length for the wire connections. The coil is placed between the capacitors consisting of two turns of B & S 16, 10mm in diameter spaced 5mm apart. Make up the balun using 600mm of RG58U.

The described version of the tuner used the lid as the base with the capacitor shafts towards the top. This is not critical and is dictated by the shape and size of the capacitors. The use of the box for continuous grounding for sockets and capacitors would be beneficial to reduce inductance paths — Tech Ed. Some expense in plugs and sockets could be spared if the balun were inside the box, however, it does make for a handy patch cable when the ATU is not in use. Make sure all solder connections are really sound and care is exercised so that solder does not encroach onto the capacitor plates.

A six metre version of this tuner required approximately 70pF capacitors and an inductor of eight turns 10mm in diameter. This version was not tested to finality owing to transmitter problems and as such, the values given may require some experimentation.

**OPERATION**

Initially, whilst you are getting the feel of things, reduce the transmitter output to the minimum necessary to obtain SWR meter calibration, and connect a suitable dummy load. Set both capacitors half in mesh. The capacitor settings are very interdependent and are varied in convention to tuning a HF version. Small changes in each will provide overall improvement until a perfect match is obtained. At this point, increase transmitter power to normal and re-adjust as required. (SWR meter diodes linearity typically cause this effect — Tech Ed).

After getting the feel of the tuner, connect your antenna and repeat as above. Open line feed balanced and unbalanced may be connected utilising the binding posts. Small capacitors have been found adequate for two metres with 25 watts, but with higher powers larger capacitors will be necessary.

**CONCLUSION**

Whilst this ATU may not tune the bed-springs or the back-fence, it may allow the television antenna to serve another purpose.
Such antennas have two feed points, both of which must receive the same power. Therefore, the impedance of the two feed points must be matched to the characteristic impedance of the delay line. This is so, whether the driven element is a loop or crossed dipoles. Circular polarisation can be generated by spacing the vertical and horizontal elements along the boom. A spacing of a quarter of a wavelength produces a 90 degree phase difference between the vertical and horizontal field components. A delay line is then not required and accurate matching is less critical. However, it is still necessary to ensure equal power flows to the two feed points so that the two feed point impedances must still be equal to one another.

The Quadraquad, as first described, was difficult to match to the delay line. Since then, I have developed a new feed system that is easy to make. It is a voltage fed system that is analogous to an end fed half-wave dipole. Many of us have used such antennas, particularly in portable work, and the usual way of feeding them is by means of a parallel tuned circuit with the antenna attached to the hot end and the coaxial cable tapped a turn or two up from the cold end of the coil.

Figure 1 shows voltage and current distributions for a diamond configuration, one wavelength, quad loop. The universal way of feeding such a loop is to split it at a current maximum and then to feed current into the terminals. However, there is another way of doing this.

Voltage maxima occur at two points around the loop so that voltage feed can also be used without having to split the loop. Simply treat the loop as if it were a voltage fed long wire, as shown in Figure 2. At VHF and UHF use a quarter-wave coaxial transformer instead of a parallel tuned circuit.

Matching the antenna to the feeder is now easy. To achieve matching, you always need two variables to adjust. In this case, one variable is the tapping point position. The inner of the feeder is slid up and down and is soldered to the inner of the transformer when the correct position has been found. The other variable, so far unmentioned, is top capacitance loading. Make the quarter-wave transformer five percent shorter than an electrical quarter-wavelength so that some top capacitance is necessary to resonate it. The top capacitance consists of a piece of rigid wire or strip soldered to the transformer inner at its open end where it is also connected to the corner of the quad. Only one end of the strip is attached to the inner, the other end floats electrically free and its length is adjusted with a pair of side cutters or tin snips. Put the VSWR bridge as close to the feed point as you can when making these adjustments. I insert the bridge into the feeder just behind the reflector.

By adjusting the tapping point and the capacitive loading in turn a perfect match can be achieved.
be achieved in a few minutes. I invariably cut too much off the capacitor at first and have to replace it, but that is easy enough to accomplish. Make sure that the slot and the open end of the transformer slope down so that water will run out. I find that water runs straight through the transformer, without affecting it greatly, although there is a slight change in VSWR when it rains. This could be the result of water on the fibreglass cross arms.

In the diamond configuration of Figure 1, voltage-feeding of either side produces current maxima at the top and bottom, and hence horizontal polarisation. Voltage-feeding either the top or bottom produces vertical polarisation. Feeding both the bottom and one side in quadrature produces circular polarisation provided that the two feed points receive the same power. When this double feed is used for circular polarisation, each feed point must be matched carefully to the characteristic impedance of the delay line in order to ensure equal power division. The two feed points are entirely independent so that it is not necessary to work back and forth from one to the other. Exactly the same procedure must be followed with crossed dipoles if you want to finish with reasonable circularity.

Most of us own VSWR bridges which are designed for 50 ohm coaxial line, so we are stuck with 50 ohms for the delay line. Thus, the main feeder sees 50 ohms at the end, and, even then, you have to adjust two parameters carefully to crossed dipoles where you meet exactly the same problems. Of course, in both cases, a 75 ohm VSWR bridge would make the game easy. A 75 ohm delay line, giving 37 ohms at the end, can be made close enough to a match for a 50 ohm main feeder.

Figure 4 shows the business end of my UHF antenna. The two quarter-wave transformers are clamped to the cross arms and the 35 ohm cross dipole is mounted on the mast. There may seem to be a lot of ironmongery in the field of the driven element, but none of it is resonant at the operating frequency and it appears to have no effect on performance. The driven element consists of 16mm (5/8”) internal diameter copper tubing for the outer and a piece of RG8 coaxial cable for the inner. The outer braid of the RG8 serves as the inner as its diameter is about 10mm (1/8”).

The advantage of a voltage fed loop over a dipole is that it is an unbalanced system so that no baluns are necessary. You still have to adjust two parameters to match a dipole driven element. Of course, you can use a gamma matching network to match a dipole, to avoid the balun, but they have a habit of unbalancing the beam and, even then, you have to adjust two parameters just the same. It is very easy to match a gamma fed loop at the voltage fed point, which is where you are only interested in a single feed point and linear polarisation. A few minutes of adjusting with the top capacitance loading and the tapping point will reward you with a near perfect match.

I, like many others, have found that loops make excellent driven elements and reflectors, they do not work very well as directors. This is said to be because the mutual reactance between loops is of the wrong sign for directors. The best idea is to use loops where they work best — as reflectors and driven elements, and to use normal Yagi directors. I call such antennas Quadraguagi if they are circularly polarised, otherwise they are, of course, known as Quaguis.

The quarter-wave transformer has another advantage — as well as being a matching device, it is a filter, so that out-of-band interference is reduced. I find that my Yagi antenna on 145MHz is much more prone to interference from nearby television transmitters than is the Quadraguagi with its quarter-wave transformers. Of course, they are poor filters, but nevertheless they do reduce out-of-band signals which can overload receiver front ends.

I discovered a trick with delay lines. A quarter-wavelength in one arm and a half-wavelength in the other arm is perfectly in order, but it pays to use odd eighth wavelengths, such as one-eighth and three-eighths. There is a reason for this. If the two feed point impedances are resistive and equal, the power will divide equally even if the feed point resistance does not match the characteristic impedance of the delay line. This only happens for odd eighth wavelengths. This can be proved as follows:

The input impedance $Z_1$, of an eighth wavelength of transmission line of characteristic impedance $Z_0$ terminated by a resistance of $R_1$, is given by

$$Z_1 = Z_0 \left[\left(\frac{Z_0}{Z_0} + \frac{1}{j}\right) / \left(Z_0 + \frac{1}{j}R_1\right)\right]$$

The input impedance $Z_2$, of a three eighths wavelength of the same line terminated by the same resistance is

$$Z_2 = Z_0 \left[\left(\frac{Z_0}{Z_0} - \frac{1}{j}\right) / \left(Z_0 - \frac{1}{j}R_1\right)\right]$$

$Z_1$ and $Z_2$ are the same, except that the imaginary parts are of opposite signs. Such quantities are known as complex conjugates.

The impedances have equal and opposite reactances, one capacitive and one inductive. When $Z_1$ is connected in parallel with $Z_2$ at the tee junction with the main feeder the two equal and opposite reactances cancel out and the resulting impedance is purely resistive. It is given by

$$Z_3 = \frac{Z_0^2 + R_1^2}{4R_1}$$

So, the power divides equally because $Z_1$ and $Z_2$ have the same absolute values and, in addition, the impedance $Z_3$ seen by the main feeder is purely resistive. There is no particular virtue in having this purely resistive impedance at the junction unless it happens to match the characteristic impedance of the main feeder. It is the equality of power division that matters. This only happens if the two feed point impedances are equal and resistive.

This is likely to be approximately the case if the antenna is resonant, or nearly so. In any case, this property of eighth wavelength transmission lines is well worth using. I have used the idea in my UHF antenna, but not in my VHF antenna. I had not thought of the idea when I built my 145MHz antenna, which uses a quarter and half wavelength.

One final word of warning — the easiest way to get confused is to solder pieces of coaxial cable together to make junctions at UHF. I tried this at first to avoid the high cost of N connectors, particularly tee junctions. I wasted much time getting confusing VSWR results. Finally, I bought the necessary N connectors, including a tee junction and it was then plain sailing.

I have a crude, but effective way of estimating the equality of power-division between feeds. Dare I say it? I use a neon bulb! I feed about 50 or 100 watts to the antenna and move the bulbs around the loop. When driven in the circular mode, loops have an unusual property. The voltage is constant at all points on the loop.
so that there should be little variation in intensity as the bulb is moved around it, see appendix. For low power testing, use a field strength meter instead of a neon bulb.

References
2. The Quadraquad — Circular polarisation the easy way. D S Robertson VK5RN. QST April 1984, p17.

Appendix

In Figure 5, $V_1$ and $V_2$, the two feed point voltages are of equal amplitude, but 90 degrees, or $\pi/2$ radians apart in phase.

Let $V_0 = \text{peak voltage}$, then,

$V_1 = V_0 \sin \omega t$

$V_2 = V_0 \sin (\omega t + \pi/2) = V_0 \cos \omega t$

At any point, $P$ a distance 1 around the loop from feed point 1,

$V_1 = V_0 \sin \omega t \cdot \cos (2\pi t/\lambda)$

$V_2 = V_0 \cos \omega t \cdot \cos[2\pi(t - 1/\lambda)]$

$= V_0 \cos \omega t \cdot \sin (2\pi t/\lambda)$

The resultant voltage, $V$ at $P$ is the sum of $V_1$ and $V_2$.

$V = V_0 \sin \omega t \cdot \cos (2\pi t/\lambda) + \cos \omega t \cdot \sin (2\pi t/\lambda)$

This is the equation for a travelling wave of constant amplitude $V_p$. The phase of the voltage varies with $t$, the distance around the loop, but there is no variation in amplitude. A dipole supports a standing wave. There are voltage maxima at the ends and a current maximum in the middle. The Quadraquad supports a travelling wave. The wave travels around the loop so that the peak voltage and current are constant. It shares this property with terminated long wire antennas. The unusual feature of the Quadraquad is that it supports this travelling wave without requiring a terminating resistor.

Figure 5 — Diagram for the calculation of the voltage distribution on a one wavelength Quadraquad loop. $\lambda$ is the wavelength.

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AMATEUR RADIO, April 1986 - Page 13
This article describes a dual level indicator using LED bars as the output displays. Although originally built to be used as a RTTY tuning indicator, it can be put to many other uses as described later.

INTRODUCTION
Some time ago, I decided that I would like to be able to decode the RTTY signals, both commercial and amateur, that I could hear across the HF bands.

Since I did not own a usable micro-computer at the time, which seems to be the normal approach, but I did have a terminal (VDU), I built a totally hardware-based system. It was designed to be extremely flexible, being able to accept almost any shift and any known baud rate in either Baudot or ASCII. The output of the box was 1200 Baud ASCII which the terminal would accept and display on the screen.

The whole project became an interesting, if not somewhat, drawn-out technical exercise of limited use since I now find that a large number of those signals do not conform to any of the common signal formats, or appear to be encrypted and therefore only print garbage.

However, whilst developing the decoder, I had reason to develop some peripheral items of equipment which have turned out to be more interesting, or useful, than the original project. The unit described here is one of them.

Anyone who has tried receiving RTTY signals on a tunable receiver quickly finds that some form of tuning aid is indispensable. My decoder incorporated buffered outputs from the tone filters to drive the X and Y inputs of an oscilloscope, so giving the familiar cross pattern display. I considered that this form of display is possibly the simplest, and most versatile display available since not only does it show correct tuning, but it can also show such things as multi-path, selective fading and presence of other tones. Many of these characteristics can cause either errors or complete lack of proper decoder operation.

After using the oscilloscope for some time I decided that I needed a simple, self-contained display that could be used to accurately tune the receiver and therefore free the oscilloscope for other work. Initially, it was thought that a solid-state version of the oscilloscope screen, using a LED matrix would make an interesting project. It very quickly became apparent that whilst being interesting, it would probably not be self-contained and definitely would not be simple or cheap. Finally, reason prevailed and I settled on a simple peak detector driving a LED bar-graph display for both mark and space channels to give desired results.

DESCRIPTION OF CIRCUIT
The circuit consists of two channels, one for the mark tone and one for the space tone. Each channel consists of a precision half wave peak detector using one half of a dual operational amplifier (uA/LM747) driving an LM3914 bar display driver which, in turn, drives a 10 LED bar display (or as described later, 2 x 10 LED bar displays.). Figure 1 shows the complete circuit.

Since both channels are identical, only the operation of one channel will be described in detail. The component identification in the circuit will relate to the channel called the MARK channel.

PEAK DETECTOR
The precision half wave peak detector uses an operational amplifier and other components, in addition to the normal expected diode. The advantages offered by this additional complexity is the improved detector linearity and the effective elimination of the detector threshold effect caused by the diode forward voltage drop.

In more detail, the operation of the peak detector is as follows:

The input signal to the detector is AC coupled through C1 and R1 to the inverting input of the operational amplifier (half of uA/LM747). The output of the circuit can be defined as the point from which the feedback resistor (R2) is driven, in this case, the junction of R2, C2 and D2. The closed loop gain (ie the gain from the input of the circuit to the output) is defined as

\[ A = \frac{R_2}{R_1} \]

In this case, R2 equals R1 so the closed loop gain is 1.

Because diode D2 is within the feedback loop, its forward voltage drop (when conducting) can be considered to be divided by the operational amplifier open loop gain. Here the open loop gain is in excess of 100 000 at low frequencies so the diode forward voltage drop can be considered to be effectively zero.

Therefore, in this circuit, the diode still operates as a diode, albeit a perfect diode with essentially no forward voltage drop.

On the negative cycle of the input wave-form capacitor C2 is charged to a positive voltage equal to the peak of the negative signal. As the input signal then goes positive, diode D3 turns off, isolating C2. The discharge time of C2 is determined by the value of VR1 in parallel with R2. The time constant of the R, C2 combination is long compared to the audio frequencies involved but short compared to the length of the mark signal so that the output voltage reflects the presence or absence of the mark signal.

Diode D1 is included in the circuit to provide an alternate feedback path around the amplifier on the positive half cycle of the input signal when diode D2 is turned off. If no feedback path is provided, the amplifier is operating open loop and could either permanently latch up or at least be a little slow to recover on the next negative cycle.

The input impedance of this circuit is defined as the value of R1 and obviously stays constant throughout the entire input cycle. In this case, R1 is 10 kΩ. It is possible to raise this up to 100 kΩ if increased input impedance is required. Just remember to change R2 as well to maintain the correct ratio. It is also possible to alter the value of R2/R1 which will give the detector gain, ie if R2/R1 = 10, then the output will be 10 volts for one volt of peak audio input.

DISPLAY DRIVER
The LM3914 is one of a family of integrated circuits which senses an analogue voltage and drives an array of at least 10 LEDs with a particular relationship between the input signal and display. In the case of the LM3914, the relationship is a linear one. The device can be made to display either a single moving dot or a complete bar-graph, by connecting the MODE pin (pin 9), either to supply or leaving it open circuit.

The integrated circuit contains its own internal adjustable reference and an accurate...
The circuit construction is quite straightforward. I have used a printed circuit board for the detectors and display drivers and the separate board for the two displays. Figure 2 shows the full-size copper side layout for both boards. The two boards are connected together by two 10 wire ribbon cables. This approach allows the displays to be mounted behind the front panel in the minimum space possible whilst the other circuitry may be mounted in any convenient location.

Figure 3 shows the component layout on the main printed board. One thing to note about the layout is that some resistors and diodes are mounted flat on the board, whilst others are mounted vertically where room did not permit otherwise. The lines with the letter L beside them are wire links. The display printed board is simple and no layout is really possible apart from deciding which end is top or bottom.

One important component which is shown on the circuit but is not allowed for on either board is C7. The circuit will work (or appear to) without this capacitor. However, when tuning across the band with this circuit being driven by the receiver output, you may suffer from rather odd QRM. This is caused by the LM3914 oscillating on peaks when driven. These oscillations are quite wide band! In theory, this capacitor should go from the positive supply side of the LEDs back to the LM3914 ground (pin 2). In practice, this is not usually possible, so I have wired directly from the supply terminal on the display board to the nearest ground point. This seems quite effective in stopping the oscillations.

While building a second unit, it occurred that it would be interesting to extend the display to a cruciform shape to see if it offered any advantages. It is very easy to do by arranging a cross pattern of four displays and wiring the opposing LEDs in series. The modified display circuit is shown in Figure 4. Because the LEDs are in series, there is no more current drawn from the supply. Under these conditions, the LED supply voltage can be higher than for single LEDs. Figure 5 shows the prototype cross display and the driver board.

The advantages of this form of display are that the LM3915 runs a little cooler under full load because of the series LEDs and that it looks quite good — especially if the two bars are different colours. The disadvantages are that it costs more and takes up more space. Another use for this form of the display was suggested when the other members of the family saw it running on the bench, although I really think that a multi-coloured, animated star on top of next year’s Christmas tree is going just a little bit far.

TESTING

After both boards have been wired and...
Figure 4 — Alternate Display Board.

All displays HDSP-48XX or other type (see text)

Relationship between wiring diagram and physical construction

Connected with the ribbon cables, it is a good idea to look for missing links, in soldered joints and swapped ribbon wires. If all looks correct, apply power.

With power applied and VR1 and VR2 at maximum settings, apply a variable amplitude audio source to each input in turn. Slowly increase the signal level from zero and watch the LED bar switch on in even steps. If any LED lights out of sequence it means that the interconnecting cables are not wired correctly. After this test, set the audio source to the maximum level required and adjust VR1 or VR2 until the top LED just turns on.

This completes testing and the unit is now ready for use.

Component Availability

Most of the components used in this circuit are readily available (at least in Melbourne), with the LED bars possibly being the hardest to find.

If you are in the position to do so it is a good idea to shop around. I found, when buying the LM3914s, that the price varied by almost 100 percent between different dealers that I frequent.

The Hewlett-Packard displays are available from VSI Electronics (Australia) Pty Ltd, who have offices in a number of cities. They have a minimum order of $20 but buying four of these displays will be just over this, so that should be no problem. I have used the HDSP-4830 (Hi-Efficiency Red) and HDSP-4840 (Yellow). There is also the HDSP-4850 (Hi-Efficiency Green) and HDSP-4832 or 4836 (Multi-Colour) for those who want all three colours in one display.

The MV57164 LED bar is manufactured by General Instruments and was brought in Melbourne some time ago. I do not know if it is still available.

Another possible supplier of LED arrays is Radio Spares Components who have outlets in a number of cities also. The relevant description in their recent catalogue is a "10 bar DIL array" and is available in red and green. I have not tried them, but the picture in the catalogue appears similar to the MV57164.

Other Uses

Although the circuit described here was built for one purpose, it can, of course, be used for many other requirements where one or two level indications are needed. The type of peak detector used allows low level signals to be measured without the normal diode threshold effect and it can be built with gain also. If the peak detector is bypassed, the LM3914 can be used as a straight level meter. I have used a similar circuit for an S-meter in a receiver.

As stated previously, the LM3914 is only one of a family of display drivers that are available. The LM3914 exhibits a linear relationship between input and the display described before. The LM3915 exhibits a logarithmic relationship between input voltage and the display, with each LED representing a 3dB increase in level. The LM3916 exhibits a similar logarithmic response modified to give a VU characteristic. Therefore, the LM3914 and LM3916 are more suitable for use where indication of wide level variations is required, such as for audio or speech level indicators. The information given in the National Data book is quite detailed with many possible applications described. The printed board and display described here should work with any of the other devices.
This is not a heresy on established matching principles but rather a re-arrangement of the facts to allow a VFO to cover the band.

**MIS-MATCHING FOR EXTENDED BANDWIDTH**

The finicky transmitter that requires no greater than a 2:1 VSWR from its nominal 50 ohms implies that any load from 25 to 100 ohms would be satisfactory. Therefore, matching it to a 50ohms load rising in a complex manner either side allows only half of the available range to be used.

Why not match it to 25ohms at antenna resonance for a rising characteristic, or alternatively, to 100ohms with an inverted impedance characteristic? Then, look at the HF coaxial feeder, which is almost never a "flat" 50ohms. Indeed, it requires a large suburban block, that contains five or more wave-lengths of feeder to flatten the VSWR curve, even at 28MHz! It is better to cut it for a multiple of a quarter wave-length for a reliable estimate of results at the transmitter end, and also to provide the matching.

Of course, the antenna, particularly for 80 metres, is usually a half-wave dipole of low height (10m or less), with a bandwidth around five percent of resonant frequency (for 2:1 VSWR) and a mid-band impedance about 55ohms. Only at the mid-band frequency can a random length of 50ohms cable be successful.

Now consider the quarter-wave transmission line transformer:  

- **a.** It transforms the load impedance across its Zo by the square of the ratio between the two.
- **b.** It inverts the load impedance characteristic over the bandwidth from a u shape to an n.
- **c.** It transposes reactance from L and C and vice-versa.
- **d.** Only half of the total Load/Source VSWR shows at each end. (More accurately, the root of the ratio).

With a quarter wave-length of 72ohms cable (UR70) a 55ohms antenna can be inverted and transformed for the transmitter to see 94ohms at mid-band, falling away each side down through the nominal transmitter 50ohms for the bandwidth to increase by a useful factor of 1.5! This can be further increased for a rising characteristic to 25ohms at mid-band, falling away each side down through the nominal 50ohms on either side.

If RG83 cable (35ohms) is available, it may be convenient with RG8 (50ohms), but 37ohms also can be simulated using two lengths of 75ohms in parallel. Otherwise, it can be manufactured by tape-lapping the insulation of "Teflon" insulated shielded equipment wire for a D/d ratio of 1.8^2 and a capacity of 144pF per metre.

Using this arrangement the compensation of 730pF value is required at the 52/37ohms junction of the cables and is probably more convenient as a 680 or 820pF mica capacitor than a 5.4 metre stub.

In conclusion, it is possible to achieve 11 percent (400kHz) of bandwidth on 80 metres (see Figure 1 and 2), and can dispense with the ATU which possibly swallowed up 20 percent of the power, anyway. If it did, we may as well connect a 270ohms power film resistor to
JOYCE was hired for the occasion. Contributed by lawrie White VK4FJC. Reference material the wave on suitable cable availability, for all other bands which is not available here.

Dipole was taken on the occasion of the First Annual calls by CB radio and in so doing, endangered the Cairns Magistrates Court for making false distress A CB operator was recently fined $2 500 in the Yagis, to extend the bandwidth. Of course, it first quarter wave transformer choice is probabil the European 60ohms coaxial cable, a half-wave.

Who are the others? ? ? (Can any readers help?). Contributed by Alan Shawsmith VK4SS

Footboard and Safety Rails are convenient additions to this dead tree aerial for testing. The tree is conveniently placed in the centre of the 80 metre dipole!

REFERENCES:
1 Radio Communications Handbook (RSGB)
2 Radio Data Reference Book (Jessop, G6JP)

Rudi Meuller DJ5CQ, VK9NM/LH, and since the 4th December 1985 VK9LM, arrived on Lord Howe Island in September 1985, for his second expedition to the region, with the intention of making as many DX contacts as possible. However, Rudi had no knowledge of what life had in store and met with a series of unfortunate mishaps during his stay.

Rudi stayed with a fellow countryman on the Island and managed to make in excess of 12 000 contacts on all bands, on both CW and SSB. His real challenge, however, was to work on the 80 metre band.

A two-element beam installed for the 10, 15 and 20 metre bands and a vertical ground plane for 40 metres things were going well. About after two weeks, Rudi was eager to try his 80 metre delta-loop and climbed a 20 metre tall pine tree to install it. Next morning the antenna was on the ground, brought down by a severe storm — Rudi was to install five more 80 metre antennas including a dipole and an inverted Vee.

On 6th November, Rudi complained of feeling unwell but, as he was 20 000km away from home and family, was reluctant to see a medical practitioner, but by the 9th November he was so bad that he had to be forcibly taken to see the local doctor, who also happened to be an amateur, Ken VK9LK. Ken diagnosed a serious illness which required emergency treatment.

A RAAF medical team, complete with operating theatre, four doctors and staff arrived from Sydney at 1am on 10th November in a Hercules aircraft. Within one hour, the medical team had set up in the three bed hospital on the Island, and performed a life-saving operation on Rudi. He was then taken with them back to hospital in Sydney.

Rudi required nearly four weeks recovering in Sydney, the first 11 days in hospital, the balance staying with Manfred VK2BZW. It is true to say though, you can’t keep a good DXer off the air as Rudi was frequently heard talking on Manfred’s mobile station from the parking area of the hospital. He returned to LHI on 5th December, and once again repaired his 80 metre antenna.

However, with only 80 watts on his TS-820, he only managed to contact the occasional JA or W station, and although he could hear Europe he only contacted five OH, one I, three SM, one OE and one YU stations.

On 6th January, disaster struck again when Rudi received word from Germany that his mother had been admitted to hospital with a serious illness and his wife had met with a minor car accident on the icy roads whilst returning from the hospital.

But worse was to come. On the 8th January, Manfred VK2BZW, called to inform Rudi that the building which housed his home-base, DJ5CQ, had burned to the ground and was completely destroyed.

The irony of Rudi’s sad saga was, after giving 30 000 stations Lord Howe Island during his two expeditions to the Island, Rudi received a call from his station only 12 hours before the fire. A young German amateur was operating from Rudi’s shack in Germany so Rudi could hear what his equipment sounded like on Lord Howe.

Rudi’s QSL information for the expedition is to his home address, Alter Main 23, 0860 Ebing-Bamberg, West Germany.

Endangered Lives

A CB operator was recently fined $2 500 in the Cairns Magistrates Court for making false distress calls by CB radio and in so doing, endangered the lives of others on many occasions. Contributed by Lawrie White VK4FJC. Reference material the Cairns Courier Post, 23rd January 1986.

Endangered Lives

Hans Rueckert, SWL
Lord Howe Island, NSW. 2898

DISASTROUS TRIP

Rudi and Manfred during Rudi’s sojourn at a Sydney hospital.

Picnic at Seventeen Mile Rocks

Can this be the oldest VK4 group-photo to survive the ravages of time?
This gathering of experimenters (amateurs), their families and friends (approximately 36 in all), was taken on the occasion of the First Annual Picnic of the Queensland Wireless Institute held on the 19th March 1922, at Seventeen Mile Rocks, located on the Brisbane River. The motor launch JOYCE was hired for the occasion.

The only person known to this writer is AE Dillon, seated on the extreme left and wearing a hat. Who are the others? ? ? (Can any readers help?).

Contributed by Alan Shawsmith VK4SS

ENDANGERED LIVES
Here is an up-to-date, relatively simple CW transmitter for you to try. Parts count has been kept to a minimum without sacrificing performance. Arrangements have been made for pre-made printed wiring boards, and a parts retailer has agreed to supply a kit of the necessary components at reasonable cost.

**PERFORMANCE**

- **Frequency**: 3.5-4MHz (depending on crystal)
- **Output**: Typically 4 watts into 50 ohms
- **Power Spectral**: All harmonics at least 50dB
- **Purity**: Below fundamental
- **Impedance**: 50 ohms. Will withstand any
- **Supply**: Nominally 12 volts at 1 amp
- **Load**: 50 ohms. Will withstand any
- **Impedance**: SWR without damage
- **VXO Shift**: About 2kHz (option)

**CIRCUIT**

The crystal oscillator at Q1 is keyed on and off via Q2 — which supplies a shaped supply voltage to the oscillator. A compromise in rise and fall times is necessary to yield a sufficiently crisp keying characteristic consistent with minimal click and chirp (a crystal is essentially a mechanical device, so some inertia exists, which can result in chirp or whoop if the oscillator is ramped too slowly). The keyed CW signal is applied to the broadband amplifier at Q3, which provides about 20dB gain and 100mW of output power. Q4 is a new generation power MOSFET, intended primarily for use in switcher-type power supplies. These devices will operate at sufficient speed for Class B RF service, at 3.5MHz. They are slightly cheaper than a conventional bi-polar device for the same power level, more tolerant of load mismatch, unlikely to suffer from thermal runaway problems, and have a higher input impedance. Q4 raises the power level to about 4 watts. The output impedance is calculated:

\[
Z = \frac{Vcc^2}{2Po}
\]

where 18 ohms, where Vcc = supply voltage and Po = expected output power. Broadband transformer T2 has an impedance ratio of 4:1, which provides a reasonable match to 50 ohms (with broadband transformers like T2, we can only obtain integer-squared ratios, ie 1, 4, 9 and so on). The wave-form emerging from the drain of Q4 can contain a significant harmonic content, and a low pass filter is necessary to reduce these components to an acceptable level, in this case — 50dBc.

**CONSTRUCTION**

The printed wiring board accommodates all the components. Some of the parts may have longer lead spacing to those on the board. There is no reason to prevent these being mounted in the upright position if this is a problem. The power MOSFET Q4 should have a small TO220 heatsink flag attached. A smear of heatsink compound or petroleum jelly should be applied to the interface for efficient heat transfer.

Broadband transformers T1 and T2 are made as follows:

- Broadband transformers T1 and T2 are made as follows:

  - The Amidon FT50-43 cores must first be coated with some kind of enamel, such as Estapol or shellac. This prevents the two windings from shorting should a scratch occur on the wire enamel. Give the cores a day or two in the sun to dry completely. Take two 300mm lengths of number 22 B&S (0.64mm) enamelled wire. Lay them parallel and twist the ends together at one end. Clamp this end in a vise. Now draw a cloth through the pair to remove any wrinkles, then twist the free ends together. Fix the pair in the chuck of a hand-drill. Whilst keeping the wire taut, turn the drill until there are about three twists per centimetre. Give the drill a tug to set the twists, then remove the pair. Carefully thread the pair through the core until there are about 11 loops. Cut the lead lengths to about two cm, and remove about one cm of enamel from each of the four leads. With a multimeter set to ohms, locate the respective windings.

  - After connecting the end of one winding to the start of the other winding to form the tap. Do not solder these together, as a hole for each lead has been provided on the board.

  - Broadband transformers T1 and T2 are made as follows:

- Broadband transformers T1 and T2 are made as follows:

  - No special precautions are necessary for the remaining components. It is desirable that the PWB be mounted in a metal enclosure. Remember to provide some holes in the lid for ventilation of the power MOSFET output transistor.

  - It will be found operationally more convenient to mount the crystal socket on the front panel of the box. If you are fortunate in having lots of crystals available, there is nothing to prevent you from including a multi-position switch to make frequency changing more rapid. The 3.580MHz crystal with solder type leads will not require a socket.

  - If a variable crystal oscillator (VXO) is required, a variable capacitor with a maximum C of about 300pF (not critical) may be inserted in the earthy end of the crystal connection. The PWB has been arranged so that the track may be cut, and the lead for the capacitor soldered to the spare pad provided. The frame (stator) of the capacitor is connected to the box, of course. Remember to allow extra room for the capacitor if a VXO is to be fitted (the box shown in the photo and the one supplied in the kit will probably be too small for most capacitors). If a crystal is being ordered from J&A for VXO, remember to specify a rubbery one.

**TESTING**

After checking that all components are correct and properly placed, the 12 volt supply may be
**PARTS LIST**

<table>
<thead>
<tr>
<th>Capacitors</th>
<th>Where used</th>
</tr>
</thead>
<tbody>
<tr>
<td>47pF Ceramic &gt; 25V</td>
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<tr>
<td>220pF Styroflex 1000pF Ceramic &gt; 25V</td>
<td>C1</td>
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<tr>
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<td>0.1µF Ceramic &gt; 25V</td>
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<th>Resistors</th>
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<td>2.7 ohm 1W or 1/2 5%</td>
<td>R10</td>
</tr>
<tr>
<td>10 ohm 1W or 1/2 5%</td>
<td>R12</td>
</tr>
<tr>
<td>68 ohm 1/4W or 1/2 5%</td>
<td>R11, R14</td>
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<tr>
<td>150 ohm 1W 5%</td>
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<td>1.8 kohm 1/4W or 1/2 5%</td>
<td>R9</td>
</tr>
<tr>
<td>2.2 kohm 1/4W or 1/2 5%</td>
<td>R8</td>
</tr>
<tr>
<td>5.6 kohm 1/4W or 1/2 5%</td>
<td>R2</td>
</tr>
<tr>
<td>10 kohm 1/4W or 1/2 5%</td>
<td>R1, R5</td>
</tr>
<tr>
<td>22 kohm 1/4W or 1/2 5%</td>
<td>R4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semi-conductors</th>
<th>Where used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2N2222</td>
<td>Q1</td>
</tr>
<tr>
<td>2N3638</td>
<td>Q2</td>
</tr>
<tr>
<td>2N3053</td>
<td>Q3</td>
</tr>
<tr>
<td>Motorola IRF510</td>
<td>Q4</td>
</tr>
</tbody>
</table>

6.8V, 400mW zener | D1 |
Inductors/Broadband Transformers | |
FT50-43 Amidon Cores | T1, T2 |
T68-2 Amidon Cores | L1, L2, L3 |
Crystal | |
Crystal, 3.5XXMHz (your favourite frequency). Crystal must be active. Some television and clock crystals available ex-stock around 3.580MHz | Y1 |
Hardware | |
Printed wiring board, heatsink for Q4, key jack, antenna connector, screws, nuts, 22 B&S (0.64mm) enameled wire, socket for crystal (if not solder-in type), etc. | |

---

**Circuit Diagram.**

T1, T2: = 11 loops number 22 B&S (0.64mm) twisted bi-filar on Amidon FT50-43 lacquered core.
L1, L2, L3: 18 turns number 22 B&S on Amidon T68-2 core.
S: Styroflex or Polypropylene.
C: Ceramic.
All resistors 1/4W or 1/4W 5% except R13, which is 1W.
* Heat sink attached to Q4.
θ Measured with key closed.
lamp connected to a coaxial connector to suit. When the key is closed, about four watts should be indicated on a power meter, or the lamp should be brightly lit, indicating that the transmitter is working. Listen to the signal on the station receiver. It should sound clean, without excessive chirp, click or whoop. Under 50 ohm load conditions, the transmitter will draw about 900mA from a 12 or 13 volt supply. By the way, the supply voltage is not critical, anything up to about 15 volts should not damage the output MOSFET.

OPERATION
Some method of switching the antenna from the transmitter to the receiver must be provided. A relay, or an ordinary panel switch will do, but remember to solder all the braids of the coax together where they connect to the switch or relay. There is no need for the 12 volt supply to be removed from the transmitter during reception, as the oscillator will be in the off-state. By closing the key without switching the antenna over, the output frequency may be checked on the receiver without putting a signal to air. Side-tone monitoring during transmission is of course provided by the receiver. It will probably be found necessary to turn the RF gain down to minimum to provide a comfortable level.

PARTS SOURCE
Most of the traditional radio components suppliers have deserted us (is it our fault?). However, Truscotts of Croydon, Victoria, have agreed to supply a kit of parts as follows:

- **Basic Kit**, including PWB . . . $25.50
- **Box** (as in photograph) . . . add $5.50
- **Crystal** — solder in type, 3.58MHz . . . add $3.50
- **Supplier** — Ian J Truscott’s Electronic World, 30 Lacey Street, Croydon, Vic. 3136. Telephone: (03) 723 3860.

A crystal on your choice of frequency may be obtained from:

- J and A Crystals, 20 Delville Street, Mentone, Vic. 3194.

REPORT OF 28th JOTA
Most of the reports from various Branch Organisers and Liaison Groups associated with the 28th Jamboree-on-the-Air, which was held on 19-20th October 1985, commented on the poor propagation, due to the low level of the sunspot cycle. It is hoped there will be an improvement this year.

All Organisers offer their thanks to the amateurs for their help and to the WIA for support of JOTA and other scouting events.

As part of the WIA 75th Anniversary, the WIA provided special QSL cards to all participating JOTA stations.

JOTA is the only Annual International event on the Australian Scout and Guide Calendar, and the only International event in which the vast majority of members could ever participate. In a country as isolated as Australia, JOTA is extremely important to the concept of the fourth Scout Law — Brotherhood. More amateurs are always needed and are most welcome to participate, so make 1986 your year to assist this goodwill.

The official Scout call signs (VK5???) are continuing to increase in numbers and VK*GGA (for the Guides) is also registered in many states.

The general statistics of stations that participated is as follows:

- **In VK1** five stations participated and had 72 contacts. VK2, 114 stations for 1669 contacts. VK3, 180 stations and 1439 contacts. VK4, 72 stations and 914 contacts. VK5, 84 stations worked 812 contacts. VK6, 72 stations for 1110 contacts. VK7, 24 stations and 281 contacts. There was an overall total of 551 stations participating, using 1140 call signs with 6297 contacts recorded. This compares with 1084 call signs in 1984, who worked 5623 contacts.

Please become involved in the 1986 JOTA and double the above figures!

Condensed from the Report on the Australian Participation in the 28th Jamboree-on-the-Air.
**AIMING HIGH WITH COMMUNICATIONS ACCESSORIES FROM GFS**

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- HOME BUILT
- EMERGENCY
- COMMS
- RESCUE GPS
- ULTRA LIGHTS
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- HANG GLIDERS
- AIRSHOW
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**LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE**

Loss in dB/30 Metres

<table>
<thead>
<tr>
<th>TYPE</th>
<th>100 MHz</th>
<th>200 MHz</th>
<th>400 MHz</th>
<th>900 MHz</th>
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<tbody>
<tr>
<td>5D-FB</td>
<td>1.86</td>
<td>2.70</td>
<td>3.90</td>
<td>6.00</td>
</tr>
<tr>
<td>8D-FB</td>
<td>1.20</td>
<td>1.74</td>
<td>2.58</td>
<td>3.90</td>
</tr>
<tr>
<td>10D-FB</td>
<td>0.99</td>
<td>1.44</td>
<td>2.10</td>
<td>3.30</td>
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<tr>
<td>12D-FB</td>
<td>0.84</td>
<td>1.23</td>
<td>1.80</td>
<td>2.79</td>
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<tr>
<td>RG-8/AU</td>
<td>2.20</td>
<td>3.20</td>
<td>4.70</td>
<td>8.00</td>
</tr>
<tr>
<td>LDF-450</td>
<td>0.75</td>
<td>1.40</td>
<td>1.80</td>
<td>2.50</td>
</tr>
</tbody>
</table>

**FB SERIES CABLE & N CONNECTORS**

**VHF-UHF SWR-POWER METER**

**MODEL**

- **HS-370S**
  - Mobile mount 130-450 MHz detachable pickup head 100W CW, 200W PEP
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    - 1.8-30-T2-FO-200 is 30m long. 1.8-30 MHz, both priced at $177 + $14 p & p
  - 2KW MODELS
    - 3.5-30-T2-2KW is 40m long. 3.5-30 MHz
    - 1.8-30-T2-2KW is 50m long. 1.8-30 MHz. Both priced at $222 + $14 P & P
  - HF NOISE BRIDGE WITH BUILT IN EXPANSION $94 + $14 P & P

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  - MDK-17 (KIT) MOD-DEMOD
  - A high performance RTTY/CW modem for use on a computer or teleprinter. Offers high noise immunity on receive. $142 + $6 P & P (kit) or $219 + $20 P & P assembled.

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**NEW DEBEGLASS WIRE**

- **DB-4 (4mm)**
  - Core diam (mm) 2.0 Wt of 200mm (g/m) 15 Temp cure (min) 15 Min
  - Decibels 6.0 5.5 4.0 3.0 2.0 1.5
  - Steel wire 2.5 5.0 7.0 9.0 11.0 13.0

**DB-5 (5mm)**

- Core diam (mm) 2.5 Wt of 200mm (g/m) 20 Temp cure (min) 20 Min
  - Decibels 6.0 5.5 4.0 3.0 2.0 1.5
  - Steel wire 2.5 5.0 7.0 9.0 11.0 13.0

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AMATEUR RADIO, April 1986 — Page 23
This article continues our band planning review, concentrating on the very-high and ultra-high frequency bands. For consistency it uses the same definitions as the earlier HF band planning paper; these were extracted from the WIA Call Book and are reproduced below for reference.

The following terminology has been adopted for the purposes of the Australian Band Plan:

**CW only**

Narrow Band Modes (other than CW) — for example occupying bandwidths less than 2.5kHz, such as ASCII, Baudot (RTTY), AMTOR (AOR/FEC) and Packet Radio.

Wide Band Modes — such as, for example SSB, FM, FAX, SSTV and Data Transmissions at greater than 300 Baud.

It is necessary, however, to indicate the use of FM separately from “Wide Band Modes” because of its greater occupied bandwidth. Therefore, FM sub-band frequencies are allocated in a different manner.

VHF/UHF Band planning is considerably more flexible with our national VHF/UHF Band plans. The need to conform to other nations and the wider use of satellite and weak signal DX propagation (eg, EME and Auroral Scatter) are co-ordinated; we have greater flexibility with our national VHF/UHF Band plans.

In contrast to HF Band planning, the VHF/UHF plans need to be defined in considerably more detail to provide adequate guidance (ie a suitable band segment) for all likely users with their many and varied transmission modes. Despite that comment, the principle Band plan sub-divisions become CW, Beacons, Phone, Satellites and FM. The call for discrete narrowband segments is less at VHF/UHF for RTTY and Data Transmissions are normally made using AFSK tone bearers which frequency modulate the carrier to produce a resultant Wide Band signal that is accommodated in the FM sub-band. Packet Radio falls into this category also, the Baud rate and modulation means employed determining the occupied bandwidth.

### 50MHz Band

Turning now to the bands in detail, Figure 1 shows the Band Plan for the 50-54MHz band, which is repeated in Table 1 with policy references. Not shown, but published in the 1984-85 and 1985-86 WIA Call Books are:

- The DOC conditions of use for the 50 to 52MHz segment, which is conditional upon location and transmission hours of Channel 0 television.

### 144MHz Band

The most popular of Australian VHF/UHF bands, the two-metre or, more correctly, 144-146MHz band is shown in Figure 2, and repeated in detail in Table 2 with policy references. This Band Plan also shows the progression from CW to Phone/CW then FM modes, interspersed with Beacons and satellite sub-bands. Of note is the allocation of 50 percent of this band, in Australia, to FM and on a users-per-mode basis this is probably an equitable share. Not shown, but available from the Call Book, are beacon allocations (once again the 10s of kilohertz denote the call sign area digit), FM channels, which are 25kHz and a repeater split of 600kHz.

International consideration from IARU Region 3 are EME and satellite sub-bands which adequately align with the Australian Band Plan.

The interval 144.000 to 144.600MHz is divided into several sub-bands as shown in Table 2. The questions posed by this Band Plan include:

- Can possible demands for further FM channels be supported and accommodated?
- Is there a real need for more repeater channels?
420MHz BAND

The existing Band Plan for the 420 to 450MHz band, shown in Figure 3 and detailed in Table 3, with policy references, is complex and not aided by the Amateur Service being the secondary service. It is also the first Australian band in which really wideband transmissions are authorised as evidenced by the two ATV channels allocated, one even being of DSB bandwidth to facilitate ATV with quite simple equipment.

International constraints, as reflected through the IARU Region 3 Band Plan, include a weak signal segment and a satellite allocation, both are reflected in the published Australian Band Plan.

The larger ATV channel, 420 to 432MHz is located at the lower edge of the band, below the allocation existing for many amateur communities in our region and the second, 433 to 450MHz (a VSB channel), is located at the remote band edge providing maximum separation for in-band repeaters.

The FM allocation from 433 to 440MHz is split by the international satellite sub-band from 435 to 438MHz, giving rise to a 5MHz repeater split frequency. Furthermore, the repeater input and output channels (using 25kHz spacings) are themselves split to accommodate a FM transmission be in the general all modes segment 144.600 to 145.700MHz, where even greater bandwidths may be used? Is there still a need to discriminate between RTTY and Data, for in computer jargon isn't the former a subset of the latter?

* Is there a need for an allocation for remote control, or repeater linking, or should these actions be respectively accommodated in the general all-modes segment and via normal repeater output frequencies?

* The paging services just above 148MHz are causing problems for amateur repeaters on the higher input frequencies. This is exacerbated by repeater receivers being sited at advantageous locations. As the pager transmitters are similarly sited they could interfere with mobile amateur receivers if FM voice systems are retained at the upper band edge. Perhaps a solution is to re-allocate the upper half megahertz to data systems. As data systems use discrete tones it should be possible to select these clear of paging tones and the error correction facilities would ensure continued usable transmissions should interference arise. Has this proposition any merit?

Table 2 — Agreed WIA 144MHz Band Plan.

<table>
<thead>
<tr>
<th>POLICY Ref</th>
<th>Frequency Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.094</td>
<td>144.000-144.010 EME</td>
</tr>
<tr>
<td>144.010-144.050</td>
<td>DX CW</td>
</tr>
<tr>
<td>144.025 CW</td>
<td>Calling</td>
</tr>
<tr>
<td>144.050 MS</td>
<td>Calling</td>
</tr>
<tr>
<td>144.050-144.100</td>
<td>DX CW/Phone</td>
</tr>
<tr>
<td>144.075 RTTY</td>
<td>Calling</td>
</tr>
<tr>
<td>144.100-144.400</td>
<td>CW/Phone</td>
</tr>
<tr>
<td>144.125 Pri</td>
<td>Phone Call</td>
</tr>
<tr>
<td>144.200 Sec</td>
<td>Phone Call</td>
</tr>
<tr>
<td>144.300 SSTV</td>
<td>Calling</td>
</tr>
<tr>
<td>144.400-144.500</td>
<td>Beacon — Primary</td>
</tr>
<tr>
<td>144.500-144.600</td>
<td>Beacons — Secondary</td>
</tr>
<tr>
<td>144.600-144.700</td>
<td>General All Modes</td>
</tr>
<tr>
<td>145.700-145.800</td>
<td>Satellites</td>
</tr>
<tr>
<td>146.000-146.000</td>
<td>FM Simplex and Repeaters</td>
</tr>
<tr>
<td>146.025-146.400</td>
<td>Repeater Inputs</td>
</tr>
<tr>
<td>146.425-146.600</td>
<td>Simplex</td>
</tr>
<tr>
<td>146.500</td>
<td>National Simplex</td>
</tr>
<tr>
<td>146.450 Primary</td>
<td>Voice</td>
</tr>
<tr>
<td>146.550 Primary Voice</td>
<td>146.600 RTTY</td>
</tr>
<tr>
<td>146.625-147.000 Repeater Outputs</td>
<td></td>
</tr>
<tr>
<td>147.000-148.000 Local and Special Purpose</td>
<td></td>
</tr>
<tr>
<td>147.025-147.375 Repeater Outputs</td>
<td></td>
</tr>
<tr>
<td>147.400-147.600 Simplex</td>
<td></td>
</tr>
<tr>
<td>147.425 ATV</td>
<td></td>
</tr>
<tr>
<td>147.450 ATV</td>
<td></td>
</tr>
<tr>
<td>147.475 SSTV/FAX</td>
<td></td>
</tr>
<tr>
<td>147.500 Sec Nat</td>
<td></td>
</tr>
<tr>
<td>77.20.02</td>
<td></td>
</tr>
<tr>
<td>79.097C</td>
<td></td>
</tr>
<tr>
<td>146.625-147.975 Repeater Inputs</td>
<td></td>
</tr>
</tbody>
</table>

are the existing repeaters adequately utilised or are they status symbols for regional amateur radio interest groups?

* Are the presently designated Data and RTTY FM simplex and repeater channels sufficient and adequate for future needs (again they are bandwidth compatible) or should Data Trans-
Table 3 — Agreed WIA 420MHz Band Plan.

<table>
<thead>
<tr>
<th>POLICY REF.</th>
<th>FREQUENCY</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>75.200.2</td>
<td>420.000-420.025</td>
<td>Mobile Channel 1 DSB/S VSB</td>
</tr>
<tr>
<td>75.200.3</td>
<td>420.050-421.000</td>
<td>Repeater Linking — A pairs</td>
</tr>
</tbody>
</table>

85.09.12/2
420.050-421.000
85.09.12/2
420.000-420.100
75.20.2
420.000-423.010
DX EME
423.010-423.025
DX CW
423.025-423.050
Repeater Linking — A pairs
439.700-439.705
Repeater Linking — A pairs
432.075-432.100
DX Phone
432.100-432.200
Calling Freq
432.200-432.300
SAT
432.300-432.400
CW/Phone
432.400-432.500
General All Modes
77.096
432.600-432.600
General All Modes
80.170D
432.305-433.725
FM Repeater Inputs
433.075 Mobile Voice
433.125 RTTY
433.225 Sec
433.275 VHF Voice
433.375 Mobile Voice
433.425 Data
433.525 Nat Pri Mobile Voice
433.575 Data
433.625 WICEN
433.675 VHF Voice
433.725 SSTV
433.750-434.250
Any FM
434.275-434.975
FM Repeater Inputs
434.275 Mobile Voice
434.325 RTTY
434.425 Mobile Voice
434.575 Mobile Voice
434.725 Mobile Voice
434.875 Mobile Voice
435.000-436.000
Satellites
438.025-438.725
FM Repeater Outputs
438.750-439.250
FM Simplex
438.775 RTTY
438.825 Sec
438.875 Data
439.925 SSTV
439.000 Nat Pri Mobile Voice
439.125 Sec Mobile Voice
439.275-439.975
FM Repeater Outputs
85.09.12/2
440.050-441.000
Repeater Linking — A pairs
76.170D
440.000-443.000
Experimental — All Modes
75.20.2
443.000-450.000
ATV Channel 2 VSB
444.250 Vision
449.750 Sound
449.750 Carrier

The interval 432 to 433MHz is subdivided to serve a number of potential users, as shown in Table 3. Not shown, but available from the Call Book are DX calling frequencies, beacon allocations and FM repeater and simplex channel frequencies only.

There are a few questions which can be raised about this Band Plan:
- Do the FM repeater frequencies need to be tidied up to group together the simplex frequencies?
- Is the interlinking pairs allocation adequate for the foreseeable future?
- Should we aim to discourage DSB ATV?
- Should we consider a phase-out date for DSB ATV? Or does it serve a useful purpose in permitting newcomers to ATV to build simple equipment?
- Are there adequate channels provided for data in the FM sub-band or should data go into the all modes segment 440 to 443MHz where even wider bandwidths may be employed?

1296MHz Band

The Band Plan for the 1240 to 1300MHz band, as shown in Figure 5 and detailed in Table 5 with policy references, was developed only recently and adopted at the 1985 WIA Federal Convention. The international considerations of the plan include satellite and EME sub-bands, which align with the IARU Region 3 Band Plans.

Other features of the Band Plan are:
- A Two wide ATV channels, well separated by 28MHz to allow in-band repeaters.
- b FM sub-bands for repeater, simplex, relays and linking purposes.
- c Sub-bands for in-band and cross-band linear transponders.
- d A separate sub-band for Digital and Packet Radio.
- e Avoidance of band space adjacent to air traffic control radars, a guard-band of ±5MHz.

Table 4 — WIA Band Plan for 576MHz Band.

<table>
<thead>
<tr>
<th>BAND SEGMENT</th>
<th>USAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>576.000-576.010</td>
<td>DX Phone</td>
</tr>
<tr>
<td>576.010-576.050</td>
<td>DX MFS</td>
</tr>
<tr>
<td>576.050-576.100</td>
<td>DX ATV</td>
</tr>
<tr>
<td>576.100-576.400</td>
<td>General Use</td>
</tr>
<tr>
<td>576.400-576.500</td>
<td>Beacons</td>
</tr>
<tr>
<td>576.500-576.600</td>
<td>Beacons</td>
</tr>
<tr>
<td>576.600-576.800</td>
<td>General All Modes</td>
</tr>
<tr>
<td>576.800-576.950</td>
<td>ATV VS B</td>
</tr>
</tbody>
</table>

576MHz Band

The 576 to 585MHz band is a temporary allocation to Australian amateurs in the UHF broadcasting (TV) allocation. Historically, it was part of the old harmonically related series 444/288/576MHz and the Band Plan is shown in Figure 4 and detailed in Table 4.

Over the last year, or so, the WIA has, in keeping with agreed policy, been seeking an assurance from DOC that a band allocation in the vicinity of 576MHz will continue to be available to the Amateur Service, despite increased activity by UHF television. Of recent times, the 576MHz band has provided the-the output channel for cross-band 420 to 576MHz ATV repeaters and it is for this purpose that negotiations continue with DOC.

The WIA has adopted the attitude that an ATV channel is required for repeater outputs, but its frequency is open to negotiation and can be any television channel in the vicinity of 600MHz that is clear and available on a regional, or even local use basis.

It is therefore recommended the existing Band Plan remain unchanged, but a fall back position of one UHF television channel for ATV repeater output be the WIA attitude. This is virtually implied by policy resolutions from recent Federal Conventions.

AMATEUR REVIEW AND ACCEPTANCE

As was said at the conclusion of the earlier HF Band Planning paper, it is now left to you, the amateur, to endorse these current Band Plans, or to record your dissatisfaction with any features through the columns of this magazine, through your WIA Division, Divisional Federal Councillor, or by writing to the WIA Federal Technical Advisory Committee. The last named will co-ordinate comments and present any amendments as appropriate recommendations to the next Federal Convention. Over to you!
Why are there Sidebands in AM Transmissions?

The simple answer is that, qualitatively, modulation is a mixing process between two or more frequencies and thus produces their sums and differences. In this article, the author explains, particularly for those who are not Old Timers, the quantitative basis of the process.

Greg Baker L20282
Half Moon Road, Mongarlowe, via Braidwood, NSW 2622

Amplitude Modulation of a carrier wave results in the original carrier, plus two sidebands. Because the production of sidebands is not intuitively obvious, it must be proved mathematically.

A carrier wave has a sinusoidal form which can be represented by either a sine or a cosine formula. Take such a carrier

\[ A \cos(\omega t) \]

where \( A \) is the amplitude and \( \omega \) is the frequency. Since the carrier can be considered as either current or voltage, \( A \) is either amps or volts. The symbol \( t \) is, of course, time in seconds. Frequency is measured in radians per second. If we want frequency in Hertz, the formula would become

\[ A \cos(2\pi f t) \]

The results are identical whichever is used.

Modulate the amplitude of this carrier with a pure tone

\[ B \cos(\omega t) \]

where \( B \) is the amplitude and \( \omega \) is the frequency which is less than \( \omega \). The resulting wave is

\[ (a + B \cos(\omega t)) \cos(\omega t) \]

which on expansion gives

\[ A \cos(\omega t) + B \cos(\omega t) \cos(\omega t) \]

Now, eliminating \( \sin(P+Q) \) from the well-known trigonometric identities

\[ \cos(P+Q) = \cos(P) \cos(Q) - \sin(P) \sin(Q) \]

\[ \cos(P-Q) = \cos(P) \cos(Q) + \sin(P) \sin(Q) \]

yields (by addition)

\[ \cos(P+Q) + \cos(P-Q) = 2 \cos(P) \cos(Q) + 4 \]

Using this, the modulated wave can be written as

\[ \cos(P+Q) = \frac{1}{2} \cos(P+Q) + \frac{1}{2} \cos(P-Q) \]

\[ \frac{1}{2} \cos(P+Q) + \frac{1}{2} \cos(P-Q) \]

which is (i) the original carrier, plus (ii) a side frequency of \( (\omega + \omega) \), and (iii) a side frequency of \( (\omega - \omega) \). Thus, a single modulating tone yields, in addition to the carrier, two distinct side frequencies. These frequencies depend on the carrier frequency \( \omega \) and the frequency of the modulating tone \( \omega \) if \( \omega \) varies across a band of frequencies corresponding to say 0 to 3000Hertz, then so too will the two side frequencies vary up to 3000Hertz either side of the carrier frequency. This is two sidebands, an upper sideband and a lower sideband, each of width 3000Hertz and giving a total bandwidth of twice 3000Hertz, ie 6000Hertz.
As a contribution to the many facets of the Jubilee 150 celebrations in South Australia during 1986, VK5 amateurs are drawing attention to their state with a series of special event amateur radio operations which are scheduled to take place at various intervals throughout the year. Such operations will go to air under the call sign VK5JSA, and contact with this call will be worth 15 points toward the required total of 150 to be eligible for the J-150 Award. To date, much interest has been shown by fellow amateurs world-wide in this award, as is obvious by the intense activity on the special nets which are operational. (See Awards Column, this issue, for updated times and frequencies).

From the 21st January 1986, the first of these special event operations took place when Jack VK5FV and Bill VK5VK, launched VK5JSA/MM aboard the PHILANDERER III during its several crossings daily between Cape Jervis and Penneshaw, on Kangaroo Island. The journeys were of 55 minutes duration, each way, across Backstairs Passage, known as some of the roughest water to be found anywhere around the coast of Australia.

Complete with radios, whips, assorted loading coils, banners and posters (professionally prepared by Peter Koen, secretary of VK5BPA), also assorted hand-out material concerning the Jubilee, the WIA and amateur radio in general, these two old salts traded their land-legs for sea-legs.

Their operating location was a tiny corner of the bridge, which was fortunate as there was little room for movement, making it a little easier to stay in the chair while the shack was rapidly changing polarisation. Despite numerous discomforts, the intrepid sailors managed to make numerous HF and VHF contacts on each crossing and also from their night-camp at the club rooms of the local football club on the island.

Operation in this vein continued until 24th January, when the operators now destined for Cape Willoughby Lighthouse and a few days rest and recreation, were joined by Bob VK5BJA, Graham VK5AQZ, Alan VK5ZN, Ron VK5RV, Peter VK5PMR and Rob Durbridge. The newcomers brought a Land Cruiser and trailer, packed to the limit with equipment and supplies. The group were also met by a Relief Force and car to provide transport across the 40km of bush roads to the eastern tip of the island, where the lighthouse is situated. The amateurs occupied the visitor’s house in the background, 75 metres from the light.

Kevin, who proved to be the most helpful, friendly and cheerful hosts one could ever hope to meet. Nothing was too much trouble for this trio in their efforts to make their guests feel at home. Tea, coffee, cake and biscuits flowed freely and continuously, along with odds-and-ends which had inadvertently been overlooked. (Over the years in their chosen profession, the whole family had become used to radio in some form or another, but they were thrilled to be able to witness amateur radio with some of the operators and expressed serious interest in getting a license. Watch for the lighthouse on a regular basis sometime in the future).

From left: Bob VK5BJA, Peter VK5PMR, Jack VK5FV, Bill VK5VK and Phil, Standing: Ron VK5RV, Rena, Alan VK5ZN and Rob Durbridge.

The Cape Willoughby landscape. The lighthouse is maintained by the Head Lighthouse Keeper, Phil Dent and his assistant Keith Robinson. The amateurs occupied the visitor’s house in the background, 75 metres from the light.

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From left: Bob VK5BJA, Peter VK5PMR, Jack VK5FV, Bill VK5VK and Phil, Standing: Ron VK5RV, Rena, Alan VK5ZN and Rob Durbridge.
ARC). This was a gi-normous array and certainly not an average suburban block construction!

It was during the afore-mentioned activities that the local electricity supply crew arrived, complete with cherry-picker in order to replace the troublesome insulator. When they had finished, they acceded the groups request to use the cherry-picker to lift the assembled 204BA onto its roost atop the mast.

With this done, and the power restored, it was time to test the rigs. Graham concentrated operating on 20 metres from the groups quarters, with occasional reliefs from Ron VK5RV. In the lighthouse, three other stations were set-up on the first landing. Communication between the 20 metre station and the stations at the lighthouse was essential and this was achieved by the kind assistance of 15 year-old Kevin, who ran back-and-forth with messages. Two metres was also employed.

The antennae comprised a base-loaded wire vertical for 80/160 metre operation, this was 20 metres long, and supported at the top of the lighthouse by a wooden jib. A 40/80 metre trapped dipole hung from the top of the building and sloped slightly to the top of a conveniently positioned flag-pole a short distance away. A 10 element two metre Yagi and two metre J-Pole were erected atop the lighthouse. Lastly, a three full-wave concentric Delta Loop for 20, 40 and 80 metres (the pride and joy of Bob, Alan and Graham, as it had taken the full weekend before departure to construct and tune, with the aid of the 160 feet (48m) high Old Water Tower, home of VK5L2, the Elizabeth.

One of the targets set for the expedition was an attempt to establish contact with the mayor of Port Lavaca, Texas (the twin city of Kangaroo Island), and have Neville Cordes, Mayor of Kingscote and Dudley at at the lighthouse to exchange greetings and news of their respective area’s 150th celebrations. Chuck VK6CF had earlier been enlisted to have his American friends in Texas and Florida make the necessary arrangements for this meeting at the USA end. However, poor DX conditions and heavy reliance on 80 metres at night, and 40 metres by day (very little was heard on 15 and even less on 10 metres), the figures were quite good. The whole operation logged 1130 different stations, with the major contributors being VK; W/K; JA; ZL; VE and I, in that order. All contacts are guaranteed a Jubilee QSL card via the bureau.

By the time the exercise was over, and considering the poor DX conditions and heavy reliance on 80 metres at night, and 40 metres by day (very little was heard on 15 and even less on 10 metres), the figures were quite good. The whole operation logged 1130 different stations, with the major contributors being VK; W/K; JA; ZL; VE and I, in that order. All contacts are guaranteed a Jubilee QSL card via the bureau.

Rena Dent, enjoys the hospitality of the amateurs in return for the hospitality she afforded the amateurs.

It was extremely important to know exactly which frequency each operator was working on, not only so that accidental meetings could be avoided, but also directions could be broadcast to where the received signals were strongest. This worked extremely well especially when VK3 stations were contacted on HF as they were told, with certainty, that the VK5JSA VHF operator was currently accessing the Mount William, Mount Macedon, Ballarat or Shepparton repeaters. Distant Victorian repeaters were easily accessed most of the time.

At the end of an enjoyable weekend, Bill and Jack took over the site to allow the weekenders to return to their respective homes and employment. Bill and Jack were to spend a more leisurely six days of operation.

The 204BA being erected (top left) and around the lighthouse.

The lighthouse with the first jib on the top right of the house.

Phil Dent and son Kevin watch Ron VK5RV in operation.

The lighthouse bedecked with antennae.
From left: Kevin Dent, Alan VK5ZN (rear), Neville Cordes, Mayor of Kingscote, Bob VK5BJA (at rig), Maree Cordes, Chairman of the Kangaroo Island 159 Jubilee Committee, Rena Dent and George Murphy.

George Murphy of the KI Jubilee 150 Committee presents Graham VK5AQZ with a copy of the Willoughby Lighthouse Jubilee Award. The Award is available for all contacts during the expedition.

L to R: Alan VK5ZN, Bob VK5BJA and Peter VK5PM.

friends, the South Australians send their thanks.

This has been the year when many donates work in the service of mankind than the Church. Its first recruits enlisted by its Founder — himself a carpenter — included no professional elders were all laymen.

Few societies can have enrolled more "amateurs" in service to mankind than the Church. Its first missionaries, and men of the New Testament, earned his living as an itinerant tent maker, while making converts, organising them into new churches and inspiring them with the ideal of service.

Throughout its history the Church has consisted mostly of laymen and laywomen, serving together with their relatively few appointed leaders.

The ideal of selfless service is worth reflecting on today when society is in tension produced by the "What's in it for me? syndrome. Ever less work, ever more pay, ever greater perks, and the "What's in it for me? syndrome. The world may salute all those who, outside their normal occupations and without thought of personal gain, volunteer to serve others in time of need.
was as progressive as anyone in this area of early the
outstanding demonstration of ability for one so Popov (to mention a few), who have never right-
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more in wireless than many do in a full lifetime of

Arthur Ernest Dillon was active from 1921 to 1927, and just recognition does not always give to those who deserve it. Fate deals with individuals in her own whimsical way, sometimes bestowing immortality on those less worthy than others. The early history of wireless is studded with such examples; Fleming, Lodge, Armstrong, Vail, and operated under the call 4EZ. The inaugural meeting was held in March 1922, and the first radio broadcast a month later, in April 1922. The Daily Mail newspaper reported the test as a phenomenal success: "Using only six watts, reception of music and voice was logged as far south as Sydney, New South Wales". Success indeed!

In Queensland, many made valuable contributions to the post-WWI state-of-the-art, but their efforts are seldom remembered now. One such person was A Ernie Dillon 4CH/4EZ.

Young Ernie grew up in the old gold mining town of Gympie. It appears that his first professional occupation was with the Gympie Times newspaper. After a short stint as a cadet journalist, he turned his attention to wider horizons and took off for the "big smoke" - Brisbane. During the following six years, A E Dillon was to accomplish more in wireless than many do in a full lifetime of experimentation.

Perhaps his most noteworthy achievement was his claim to be the First Sound Broadcaster in Queensland — 25th July 1921. This was an outstanding demonstration of ability for one so young, as his station was constructed from "raw" materials only. The event was published in both the Brisbane Courier and Daily Mail. This brought a response from one or two others, who were similarly engaged, as to the relative success of their tests. Whatever the outcome of these conten-
tions, records clearly show that A E Dillon 4CH, was as progressive as anyone in this area of early broadcasting on the medium wave band.

Brisbane's oldest and historically rich building (convict built in 1827), is the Observatory, Signal, or Windmill Tower. It is undisputed that A E Dillon 4CH, was the first experimenter to conduct MW tests and transmissions from this tower during late 1921, or early 1922. The Tower was ideally suited for this purpose as it commanded a panoramic view from Moreton Bay in the east, to Darling Downs on the western horizon. Nearby, he erected a 150 feet (45m) mast and strung an 80 feet (24m) antenna between it and the Tower — the most impressive configuration of its kind in Queensland at the time. Under his direction, 240V AC was supplied. This simplified the problems of power supplies and enabled his tests to be conducted on QRN instead of QRP.

A E Dillon was largely responsible for the formation of the Queensland Institute of Radio Engineers (QIRE) and became its first Secretary/ Treasurer. This body claimed to be the first of its kind in Australia. The list of Charter Members included the names of some very prominent citizens; vis experimenters, pioneers, academics and business men. Its main aim was to raise the status of wireless "tinkering" to that of an organised science, with its members willing to assist anyone interested in intelligent research. The Articles of Association of the QIRE are still in existence, but are too lengthy to be included here. The Institute set-up its headquarters in the Observatory Tower, installed its own transmitter and operated under the call 4EZ. The inaugural meeting was held in March 1922, and the first radio broadcast a month later, in April 1922. The Daily Mail newspaper reported the test as a phenomenal success: "Using only six watts, reception of music and voice was logged as far south as Sydney, New South Wales". Success indeed!

Ernie then returned to his home town and, with the help of his former employer The Gympie Times, called on all those interested to form a radio club. The Gympie Amateur Radio Club came into being in May 1923 — a first for Gympie and another first for 4CH.

Back in Brisbane in October 1923, Ernie participated in arrangements made by the QIRE to demonstrate wireless transmission to the general public. Using 25 watts of power a musical program was transmitted from the Observatory Tower and listened to by an audience of 1000 people attending a concert at the South Brisbane Technical College. This was quite a remarkable display of interest by the man in the street in the "new fangled invention of wireless". Yet another successful first for A E Dillon 4CH — a telegram was received from Sydney saying reception of the concert was loud and clear.

Before the end of the year 1923, 4CH was involved in yet another无线 broadcast; viz the Australian Radio Relay League. The already well established American Radio Relay League (ARRL) no doubt influenced the formation of this body in Australia and New Zealand — the aims of both Leagues being basically similar. At the inaugural meeting of the Queensland chapter of the League, A E Dillon was voted into an executive position — more work but also more success for the now very prominent Ernie 4CH.

The Relay League of Queensland (RLQ), a group completely distinct and separate in aspirations from the above-mentioned group, was then founded — and an A E Dillon 4CH name was to be found listed as an RLQ Committee Member. It appears he was also on the Executive Council of another freshly formed society; via The Radio Society of Queensland.

One might now well ask how he found time to attend adequately to all these various commitments. Besides his 8am-5pm work as an Electrical and Wireless Contractor he conducted broadcasts from both the Tower and his home at New Farm and made himself available as a guest speaker whenever asked. The newspapers and radio magazines of the time were printing many of his articles and in October 1925, 4CH accepted the position of Technical Editor and Adviser with the weekly magazine, The Queensland Radio News. As with all other aspects of his busy life, his output was prolific. This stay with the QRN can only be seen as most successful.

In retrospect, there is no doubt that the intense activity of A E Dillon 4CH, as an experimenter, broadcaster, administrator and journalist played a great part in stimulating wireless progress in Queensland between the years 1921-1927 and later into the 1930s. It is a pity that so little is now known of him.

At the height of his popularity and success, during the late 1920s, he appears to have dropped his experimental work, put away his very persuasive pen and left the City of Brisbane to take up a position in northern and western Queensland. He also married. Fortunately, in his wisdom, he left to posterity a stack of newspaper clippings — stories and articles attesting to his various accomplishments. All these factually place him where he rightfully belongs — one of Queensland's outstanding early wireless pioneers.

A E Dillon 4CH, became a silent key on 24th March 1960, at Brisbane. He is survived by his wife, son Brian and daughter Ernene.
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AMATEUR RADIO, April 1986 - Page 33
Antenna polarisation is vertical with a J Pole being in place at Port Hedland and Wickham, we could perhaps look forward to further contacts of this type.

"Grant VK6KE, from Shag Gap, reports a recent improvement in his two metre set-up and has now been heard on all repeaters from Exmouth to Hedland. He forecasts further improvement with a nine element Yagi to give his 150 watts signal some assistance".

Thanks for the first copy received of your newsletter, boys, please keep it coming. The Editor is Dave Holt VK6YA, PO Box 410, Wickham, WA 6270, or phone (09) 187 1926.

SIX METRES

After the continued frenzied activity of the first two weeks in January, when six metres continued to show much life with contacts right across Australia, there was a most daily basis, conditions changed dramatically for the latter part of January and into February. A number of operators have written with an update to their six metre standings after having contacts with VK9LC and 2MOY.

I was rather intrigued by the last paragraph in the letter from John VK4PG, when he says, "Subject to standby, we can have only 27 countries yet, so hardly worth listing at the moment". On the contrary, I think 27 countries are well worth listing, being in the upper bracket for VK4PM. I would be pleased to report! Half the fun of having a Standings List is whether you can eventually topple the next above you, sometimes you can work a country the other operator doesn't know of, so you get one closer. Please send in your list John!

By the time you read this Graham Baker VK8GB, will have taken up residence in Canberra, about 200km west of Sydney as well as an update of his six metre standings. As the letter is salient points are included.

In response to a request from me during a six metre contact, Nev VK2QF sent a resume of the six metre scene from his location at Hargraves, about 200km north-west of Sydney, as well as an update of his six metre standings. As the letter is quite lengthy, some editing has been done, but all salient points are included.

Firstly, Nev comments on the presence of intruders from the north on the band. 52.450 and 52.100MHz, using SSB and on 52.250MHz from 52.325MHz, using the same call sign. These VK6RTT (formerly VK6RBS) have been the case for many others, particularly in the eastern states, but there appears a lot of contacts were made out of Australia, which shows the state of the band over a period of many weeks.

I1/12 VK9ZB 5x9 0504; VK82ZU 5x3 0727; 6/12 VK12ZL 2238, P29BH 4x1 2301, VK1P backscatter; VK722 5x9 2233, VK1P backscatter; VK60X at 0303 5x9 + 30 for the strongest VK6.

From the same publication: "In mid-January, Dave VK6YA, worked Perth direct on two metres, 52.325MHz, using the same call sign. These VK6RTT (formerly VK6RBS) have been the case for many others, particularly in the eastern states, but there appears a lot of contacts were made out of Australia, which shows the state of the band over a period of many weeks.

30/10 VK8ZGC 0903; 01/10 VK1, VK7, VK9, VK0, ZL3AFN 0817; 8/11 VK6ZLX, VK8TM, VK6KT, at 1000, mostly 9; 9/11 ZL1BHX 0947 5x2; 17/11 ZL2BPY 0549 529, ZL211 VK1 2320 5x11; 28/11 VK9LC 0249 5x9 + 3 from 0700 plus VK7, VK8GSB 529 around 0930.

I1/12 VK9ZB 5x9 0504; VK82ZU 5x3 0727; 6/12 VK12ZL 2238, P29BH 4x1 2301, VK1P backscatter; VK722 5x9 2233, VK1P backscatter; VK60X at 0303 5x9 + 30 for the strongest VK6.

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set up in the three bed hospital and a successful life-saving operation had been performed on Rudi, an hour, a complete operating theatre had been 700km from Sydney, in a Hercules aircraft. Within of DJ5CQ in Germany. The writer of the letter is a and VK9LM since 4th December 1985, and holder what tells the sad story of a series of disasters which, in turn, might lead to an increase in interest Achievement of $5 for a QSL card. (Page 42, December 1985, AR). After the success of the expedition, in which more than 200 mile contacts were made, the rack began to fly around the country when those seeking QSL card for their contact found they were indeed being asked for $5. I believe Nev, when he says the fee was in an effort to offset some of the costs of the expedition rather than to make a profit, but many felt they were being held to ransom and were very vocal in their objections. The results were rather out of scale with the fee and I appreciate that the matter investigates at official levels.

I wrote to Nev outlining my objections to what he was doing. After initially refusing to change his mind, Nev eventually returned my cards, even the QSLs for VK9LM and VK9KL without any fees, in return for a SAIE, and, in fact, I already have received my cards.

On viewing on your viewpoint, you may or may not agree with what has transpired. I believe Nev did the right thing by changing his mind and that he did not really see the implications of his first move, and also that he was rather oblivious of what is somewhat notorious when it comes to supporting what can be a well intentioned expedition or similar, where they have come to the party on some good faith or because it is a worthwhile cause. I think this money was the best way to overcome the problem.

I now hope everything will quickly return to normal, but I am certainly a lot happier than I have been before. If anyone wants to send a donation towards causes after recovering their QSLs, then this is a matter for them to decide as it will be quite unlikely that the situation will be repeated in the future. Nev has indicated he will probably make another expedition to ZM7 or ZK2 at the end of this year. (Page 42, December 1985, AR).

DJ5CQ/VK9LM

A matter quite unrelated to that above has been brought to my attention by the receipt of a long letter (photo- copied) from Hans J Rueckert, c/- Trader Nicks, Lord Howe Island, NSW. 2898, which tells the sad story of a series of disasters which have befallen Rudi, formerly VK9LM, and VK9KL since 4th December 1985, and holder of DJ5CQ in Germany. The writer of the letter is a SWL, Wally, and it is Wally's story which I will relate.

Rudi was making his second expedition to LHI on 70cm and found aircraft enhancement signals to be a simple matter for him to turn the dish to the moon for me to hear them. For stations which are running 160 watts or more and using a good antenna, it would be a well intentioned expedition or similar, where they have come to the party on some good faith or because it is a worthwhile cause. I think this money was the best way to overcome the problem.

I now hope everything will quickly return to normal, but I am certainly a lot happier than I have been before. If anyone wants to send a donation towards causes after recovering their QSLs, then this is a matter for them to decide as it will be quite unlikely that the situation will be repeated in the future. Nev has indicated he will probably make another expedition to ZM7 or ZK2 at the end of this year. (Page 42, December 1985, AR).

MOONBOUNCE FOR EVERYONE

The heading appears in December 1985 QST, The World Above 50MHz and is over the photograph of the slightly large array at WS5N located south of Highway 65, near the city of Alexandria, Louisiana. The array is dual point mounted, with the main pivot mast being rotatable. Both masts are about 30 feet tall, with three azimuth rotation pathways. The array requires almost an acre for full rotation, 360 degrees of rotation takes about 6.5 minutes.

Early tests with the array indicate that it is performing about as was predicted. The main power lobe (E plane) beamwidth is about 3.75 degrees, with the E plane beamwidth is about 5.25 degrees wide. Good readings were obtained from the sun and other extra-terrestrial sources. The first weekend on the air resulted in working about 40 stations on random calls via the moon.

I am hearing my own echoes using an ICE251 without any pre-amplification and with a single Yagi antenna. Average received signals should be able to hear me if they point their antennas towards the moon. I call CQ a lot on 144.008MHz on weekends, beginning on my moonrise when the sun is low in the sky. The start of estate, running 160 watts or more and using a good antenna such as the Cushcraft Boomer or KLM 16LBX should be able to get enough power to the moon for me to hear them. For stations which cannot elevate their antenna schedules will have to be on moonrise or moonset when they aim towards the moon.

The ROSS HULL CONTEST

A few comments are reaching my desk about the Ross Hull Contest, hopefully there will be some more soon. Most are commenting on the seeming reluctance of some operators to give numbers. These may be newcomers who do not understand what it is all about or those who are not happy with it...
the present rules and are resisting participation anyway. Nevertheless, it is being spelled out that the loss of the Contest would see a dramatic drop in interest on the VHF bands during the Es season.

Whatever you think, let me hear from you and send in those scoring tables, the more we have the better to judge where improvements can be made.

50MHz STANDINGS

The 50MHz Standings as published by Bill Tynan W3XO in November’s GST are interesting in that the top place is now held by VE1YX with 77 six metre two-way confirmed countries, second place goes to JA4MBM with 76 countries, then follows K8WKZ with 71, K5FF 69, VE1BNN 68. There are just over 330 call signs listed overall, and the list now includes those nominated in the Australian list from Amateur Radio, which was headed by David VK2BA at the time of printing. I note that Bill decides his positions by the number of countries claimed, whereas, I prefer it to be determined by the countries confirmed. Just a matter of how you see it, I suppose.

GENERAL NEWS

I have received an interesting screed from John Allen VK5UL, giving an outline of his activities on the five metre band before WWII and leading on to his radar involvement during the war. It is a bit long to include this month so I will let you read it next month.

As a result of my contact with Chris ZM80Y, on 16th December 1985, I have now received his QSL which says that Raoul Island, in the Kermadec Group is an active volcano with up to six quakes a day, most of which are never noticed. It is mainly covered by the Nikau Palm, the home of the colourful Tui bird.

January 1986 QJ ham radio from Japan (via VK6RQ), TVQO video on 46.250MHz was heard in Japan on 14 days during October and November; AT8NO 3300 days during the year; ATV0 on 19/11; ZL TV on 20/11, and VK6OX was worked by JA1VGN on

Dick Norman VK2BDN with 10GHz FM transceiver mounted behind a 40cm dish with 28dB gain.

23/10. So it seems signals still cross the equator occasionally.

Last month I mentioned the exploits of the VK2 10GHz gang. This month I include a photograph of Dick VK2BDN, with some of his equipment.

Closing with the thought for the month; "A smile is a curve that can set a lot of things straight".

The Voice of the Hills.

TEST EQUIPMENT

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Ron 5V7RW, who is missionary, will be returning to the USA around the end of July.

160 METRES

During the CW/WW 160 Metre Contest Don G3XTT, working 5 is countries and another 11 and notched up Worked All Continents in eight-outs.

Paola 12U1Y, in one-hour and 34 minutes on the 18th January, worked 45 W and VE stations. So what many may say; but Paola was only using a 430S and an inverted ‘Vee’ at 13 metres to the apex. Aiko JASDOH/NN7S, showed up from Macau late last year. As 1U1A is one of the top operators using this band. He holds 160 Metres DXCC and on this occasion WAC was obtained in just days of operation from Macau. I think yours truly will migrate to that band, when time permits!

DISAPPOINTMENT

From a number of overseas sources, it appears that the DXCC ‘countries’ for 160 Metres are quite illusory and are not a reality. Much interest has been shown by members, both at home and overseas, who obtained the 160 Metres DXCC status during the 1983/84 competition. The issue of the ARC 18th February, 1985, should have confirmed that this list is incomplete would be a long time before we near any genuine coverage, or in fact many operators make no distinction between the different DXCC ‘countries’. As a matter of fact many operators make no distinction between, lets say, the South Shetland Islands and the Antarctic Continent. As far as the operators are concerned they are located in Antarctica, and that is cold enough for anyone.

(3) Argentina assigns the letter ‘Z’ as the first letter of the SUFFIX of stations located in the Antarctic Region. Prefixes heard or worked include LU1Z—through LUBZ—; the call sign AZ1A appears to be a new combination, and an exception to the rule.

(4) Chile assigns the CE9 PREFIX to stations in Antarctica. For the amateur the suffix is meaningless.

(5) Note that more than one island comprises the South Sandwich Islands, South Shetland Islands and South Orkney Islands. South Georgia is singular, as in Antarctica.

Angel, has gathered the following information from maps, QSLs and similar documentation and suspects that it may still contain some inaccuracies, therefore any documentation that would confirm that this list would be incomplete would be appreciated by Angel direct or via your scribe who will gladly pass the information on.

ARGENTINA

SU-FFI

1Z A Destacamento Naval Orcadas Laurie Island S Or Abo 2Z5A
1ZB B Base Teniente Matienzo (see 2ZD) Palmer Arch Ant
1ZC C Destacamento Naval Deception Island Sh
1ZD D Destacamento Naval Carcaso Ant
1ZE E Estacion Scientific Almirante Brown Puerto Paraiso Ant
1ZF F Destacamento Naval Bahia Esperanza Bay
1ZG G Base Gen Belgrano 2 Belgrano Peninsula Ant
1ZH H Estacion Scientific Teniente Jubany King George 1 5 Sh 4 Ant
1ZI I Destacamento Naval Elphinstone Ant. Also 42Z Station Ant
1ZM M Base Esperanza Trinity Peninsula Cord
1ZN N Destacamento Naval Petrof Ant. Also 12P Station Ant.
1ZP P Destacamento Naval Petrel Ant. Also 5Z Station Ant
1ZQ Q Base Esperanza Cabral Trinity Peninsula Ant. Also 12Y Station Ant
1ZV V Base Esperanza Cordova Same as 12M Station Ant
1ZW W Destacamento Naval Malvinas Ant. Also 12Z Station Ant
1ZX X Destacamento Naval Filchner Ice Shelf Ant
1ZY Y Estacion Cientifica Filchner Ice Shelf Ant
2ZZ B Base Primavera Grahamland Ant
2ZD D Base Teniente Matienzo Neuland Ant
2ZM M Base Esperanza Cordova Near Larsen Inlet Ant
2ZP P Destacamento Naval Filchner Ice Shelf Ant
2ZZ Y Estacion Cientifica Filchner Ice Shelf Ant
4ZS Z Base Antarctica Ellsworth Snow Hill Island Ant
4ZZ ZZ Destacamento Maracibo Destacamento Naval Ellsworth (see 1Z2) Ant

NOTES

April 1986 - Page 37
AMANDA ISLANDS
Deena VU2HMD, who operated from this rare country last June appeared again in January. Apparently there is a transceiver installed in the Andaman Beach Resort Hotel, however no authorisation seems to be forthcoming, so give it a miss as regards a QSL.

T A I P E I
A lot has been said of late about Feng BVODA, ex XW8BR. It is interesting to note that logs in various forms, due to the intrepid operating habits Feng had to use before he fled the country, are obtainable from Massy JH1ARJ, for the next three months then the logs will be returned to Feng.

ARUBA
Bob KQ2M, made in excess of 12,500 contacts during his short stay. He is adamant that it should become a separate DXCC country and has documentation to submit that will prove it. I may yet be proved wrong in my prediction about its new country status.

ILLEGAL OPERATIONS
It appears that a number of C53 JM/M call signs have appeared on the bands. The Gamman Licensing Authorities, along with many other authorities DO NOT ISSUE licenses that can be used for maritime or aeronautical operations. In fact there are only two legitimate EL Maritime operators to my knowledge.

TRAVELLING
Ghis ON5NT, a very keen DXer as mentioned in a special article last month, has successfully completed the Advanced FCC examination and has the call sign A44OI. He is travelling around CX, LU and CE, and hopes to obtain a license to become QRV from these locations — and I hope to get a story for this column.

OGASA W AR ISLANDS
The island is presently activated by the Tokyo University Amateur Radio Club under the call of JAI1YWX/JD1. All QSLs to JAI1YWX or JD1LPN.

DX CLUBS LIST
Bob WSKNE, Editor and Publisher of QRZ DX, is compiling a list of all DX clubs and would appreciate details of any you know or belong to. Bob will make the list available to all requesting the information when it is completed.

TROMELIN ISLAND
This is one of France’s many tiny possessions that shows up as a dot on a map of the Indian Ocean, has become a weather station and is located about 400km off the north-east coast of the Malagasy Republic. This fauna and flora sanctuary is about one and half kilometres in length, sand covered and scattered with bushes. The island is administered by the Prefect of Reunion Island and there is a small airstrip that is used for transportation of the rotating of meteorological crews from other outposts such as Juan de Nova, Europa and Gloriosa.

BITS AND PIECES
GB2SDD was the special call for St David’s Day. QSL to GW4HOC. * Note the QSL information for Rudi VK9LM, is now via DJ5CCQ or OE1ZL. SASE or two IRCs on an AIRMAIL endorsed envelope. * 4K1J, quite active on 40 metres CW.

MARRIED IN INDIA
Shanthina VU2GO, well-known to DX operators world-wide, became a married woman on 21st August 1985. The monotone reproductions depicted do not do justice to the colourful pictures supplied of the wedding but are reproduced for the benefit of her many friends in this country.

THANKS
Sincere thanks are extended to the following: The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, BARG, CCQ-OSO, DX FAMILY FOUNDATION NEWSLETTER, THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER, KMBFZP REPORTS, LONG ISLAND DX BULLETIN, THE VIENNA INTERNATIONAL RADIO CLUB, ORZ DX, RSGB DX NEWS.
The following radio enthusiasts are recipients of the WIA 75 Award.

**75 AWARD RECIPIENTS**

515 | Ewald Schulte DL4JL
---|---
516 | Janti Silman YD0MG
517 | Harri Ludoleh DL2BZ
---|---
518 | Neville Spray GW4KGR
519 | Mavis Stafford VI0KS
520 | Eng George Cruay YQ3RF
521 | Colin Glean VK2GM
---|---
522 | W J Cross VK2BCW
523 | George Shuttlar VK6OQ
524 | Kevin Jones VK4AKI
525 | Russell G Smith VK5KAK
526 | Keith Sherlock VK2WQ
---|---
527 | T A Allen VK7AL
528 | Stuart Fairbairn VK2AYF
529 | W G Shakespeare VK2AGF
530 | Bruce A Batholds VK3UV
---|---
531 | Gary Carroll VK3DOM
532 | Gary B Baker VK8NRA
533 | Harley D. Ander Jr KD7UH
534 | H W Patterson ZL3TXK
535 | Simon Andrew VK3KRL
536 | J A Patterson VK2CJP
537 | Roger D Harrison VK4MKY
538 | Craig Cook VK3CMC
---|---
539 | Steve Reeves VK2CSR
540 | Frank B Barsanti VK2FDB
541 | Bill Rice VK33AP
542 | Tony Mowbray VK2AJ
543 | Lindsay Collins VK5GZ
544 | Terry N Pearson VK7KF
545 | Dennis Scrub VK3NMS
546 | John Bennett VK8BR
---|---
547 | Max Hardstaff VK7RY
548 | C K Williams VK3NCW
549 | Tony Rows VK3KDC
550 | W L Stevens VK4YN
---|---
551 | G Hume VK2VR
552 | Stewart Dick VK4NII
553 | Giorgos Giokas VK6VSL
554 | Spyros Himakios SV4CS
555 | Giorgios Antonopoulou SV8BRX
556 | Mixalis Kridieras VRK
557 | John Hempel VK8JS
558 | John Hempel VI5JS
559 | John Hempel VI5SA
560 | J A (Bert) Cusick VK0MO
---|---
561 | Helene Dowd VK7HD
562 | B D Clark VK4KU
563 | G Kaska VK3CGK
564 | John E Daluas YB0BWI
565 | Christina Scelistoywati
---|---
566 | SWL YC0GKK
567 | David J McAluay VK3EW
568 | Jeannine Ramsey VK2CUF
569 | K M Wilmott VK2FKW
570 | Hans-Jurgen Baumann DL5IC
---|---
571 | Gauther Rohleder DL9NB
572 | Gerald Katz 4Z4Z
573 | Zdenek Laznovsky OK1DZL

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**Cert No Name/Call Sign**

518 | John Hempel — WIA SADiv for VK75A
---|---
519 | Chin Pak Kooi 9MCW
520 | Werner Becker DK9KE
521 | Werner Becker Fritz EA8OR
522 | Kenton A Dean S59HWH
523 | Eleanore McGrath VK4BEW
524 | John Beaudea Ewelston VE2EDL
---|---
525 | Steve Lamb W9NUF
526 | John Alcorn VK2JWA
527 | J C Keny VK6PAX
528 | H J Masefield VK3NXX
---|---
529 | Nancy Baker VK2NPG
530 | S Bush VK7EQ
531 | A T Webb VK2UC
---|---
532 | Steve Millington VK2EKB
533 | R S Watkins VK8VX
534 | Stephen Martin VK3DQL
---|---
535 | Bev Habiton VK8DE
536 | Paul Walenski DF3EN
---|---
537 | Sandeep M Kacharia VU2RGA
538 | Franz Hennig DJ9HF
539 | Claudine Hennig DLHAC
540 | Bernhard M Bohme DL9NCC
---|---
541 | Moch Sidarta YB0BWI
542 | Herbert Heine DL8BAS
543 | Herbert Heine Jorg DL9BBO
---|---
544 | Herbert Heine Adolph DK7BV
545 | Jack Small ZL1KQ
546 | Conrad R Canterford N7DUO
---|---
547 | Stan F Porter 7Q-001
548 | Darren Mitchell VK2PXO
549 | Takashi Magata JA3EDD
---|---
550 | Ruby Henshaw VMKPV
551 | Alain Lorrain ZC4AP
552 | Michael Venter VK2CML
---|---
553 | Jack Jannou VM2JZ
554 | Guy Kwok VK2WW
555 | John Kiesler VK4MR
556 | Bill Mackenzie VK2EU
557 | Herbert Heine VL3B
---|---
558 | Paul McDonald VK2CJ
559 | John Hempel VK4M
560 | John Hempel VK4AM
561 | John Hempel VK4AL
562 | John Hempel VK4AR
---|---
563 | John Hempel VK4BS
564 | John Hempel VK4CT
565 | John Hempel VK4DM
566 | John Hempel VK4DN
567 | John Hempel VK4DO
568 | John Hempel VK4DR
569 | John Hempel VK4DS
570 | John Hempel VK4DT
571 | John Hempel VK4DU
572 | John Hempel VK4DV
573 | John Hempel VK4DD
574 | John Hempel VK4DC
575 | John Hempel VK4DB
576 | John Hempel VK4DA
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Congratulations are extended to all recipients.

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**Mid-20s ERA**

The accompanying photograph features the shack of OT Russell VK2WT. Above the equipment, many QSL cards from past amateurs of the period can be seen. Many call signs will be familiar to Old timers, no doubt.

Russell's first valve equipment was a two-stage oscillator, push-pull amplifier using UV201 valves, a detector receiver using a UV200 soft valve and a UV201 amplifier. The period was around 1925-26. High tension B batteries with a six volt accumulator for the filaments provided the power.

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The WIA 75 Award was established to recognize the contributions of amateur radio operators to the hobby. The award is based on active participation in the sport and the dedication of the recipient to the principles of amateur radio.
CONTEST CALENDAR

APRIL
1-2  WW SSTV Contest
3-5  DXYL to North America YL CW
12-13  IBM QSL Party
16-20  DXYL to North America YL SSB
24-27  Swiss Helvetia Contest

MAY
1-4  County Hunters SSB Contest
5-7  USSR DX Contest
17-18  Michigan OSO Party
18-19  DX-YL to North America YL SSB

24-25  IBM OSL Party

1986 CLARA AC/DC “Mystery” Contest
(Rules March issue)

JUNE
21-22  1985 VK Novice Contest (Rules will appear in May issue)

I had not included the CW WW WPX SSB Contest in the Calendar for 29th-30th March. I trust that this will not inconvenience anyone. I do not claim to provide an optimal list of contests for each month and, in fact, I only try and provide as good a guide as possible as to what is on.

The rules for the CW World Wide WPX Contests are the same as for last year, see page 43, April 1985 issue. It would serve little purpose to repeat them again since they are well established worldwide. Following are a few points to keep in mind.

The duration of contests is from 0000UTC on the Saturday to 2400UTC Sunday. Only 30 hours out of the 48-hour contest period may be used by single operator stations. Off-times can be used in up to 10-minute periods. Multi-stations can operate for the full 48-hours.

The ORP section has become very popular and it is worth your attention. The definition of the multiplier is spelled out and is not to be confused with the interpretation used by the CW WPX Award program. Also, bear in mind that stations in call areas different than that indicated by their call signs are required to sign portable.

The multiplier is determined by the number of different prefixes worked and is counted only once, regardless of how many times it is worked on other bands.

Another point to keep in mind is that, in the multi-operator, single transmitter category, only one transmitter and only one band may be used in any 30-minute period. Picking up a new multiplier on another band during the same time period is definitely prohibited.

An alphabetical/numerical check list of claimed working will, however, be required and must be included with your log.

An updated trophy and plaque awards list now shows over 40 awards. Most will pay well in the line of competing. Deadlines for logs are 10th May and 10th July for CW. Be sure to indicate SSB or CW on the envelope. All logs to be posted to: CO Manager, WPX Contest, 76 North Broadway, Hicksville, NY. USA. 11801.

I am indebted to Frank Anzalone W1WY, for the comments supplied regarding the CO Contests and also from the other contest material which he provides me on a regular basis.

You may note the complexity of scoring for some of the overseas contests and then you may understand the effect that the rules for contests originating here in VK are not so complicated after all.

REMEMBRANCE DAY CONTEST 1985

Well, as indicated by the announcement in last month’s issue, the gremials were really active in the production of the details and results of the Remembrance Day Contest, which appeared in February’s magazine. At times it may appear that one has a system and that it is working well, however, as in this case, let just one sheet of paper become mixed up in the pile and a disaster may ensue. I would hesitate to describe the problems which have arisen as a result of such a happening as actually being a disaster as the mistakes made can be corrected, still, such is more embarrassing and I certainly offer my apologies to all concerned and in particular, to the members of the New South Wales Division. I also apologise most profusely to the VK1 Division and offer my wishes that they will try again in the Remembrance Day Contest and gain the success which they would wish for. Now, without further ado I will now provide amended details of results which were incorrect and list those logs which were omitted.

VK2 High Frequency Section A (Phone)

C/SIGN SCORE
KL  628 ZL  365 ARQ  207
FR  537 VK7  482 VK3  4473
DK  521 AFG  304 BT/YP  205
AN0 494 PS  285 CZX  204
BO  494 BOS  221 RX  202
DUB 440 BOS  221 RX  202
Dyw 412 DOP  210 AOA  199
EJW 390 Wi  208

It is necessary that the Divisional Scores be amended with the inclusion of the logs listed above, as well as additions to the VK6 Divisional Score to include VK6YP — 105 points, HF Phone; VK6EB — 155 points, HF Phone; VK6EB — 60 points, VHF Phone.

The number of licensees listed for each Division was not correct with a major discrepancy occurring in the CAT contacts with the VK3 figure. Other amendments are: VK7JE with 90 points operated HF CW and the call sign VK3CCG in the HF CW Section should be amended to read VK3CGG.

AMENDED RESULTS — REMEMBRANCE DAY CONTEST 1985

The formula for the determination of results for each Division is: Total Points/Total Divisional Licenses multiplied by Weighting Factor.

VK1 — 307; VK2 — 482; VK3 — 4473; VK4 — 4473; VK5 — 12600/4825 x 2.71 = 118.57
VK6 — 14189/4473 x 5.96 = 18.90
VK4 — 6602/2458 x 5.83 = 15.44
VK5 — 16668/1414 x 1.31 = 11.46
VK6 — 122170
VK5 — 12552/2141 x 1.26 = 15.18
VK9 — 5198
VK7 — 2871/569 x 1.27 = 6.408

NOTE: VK8 points and license totals are added to VK5 and VK9 points and license totals are added to VK6.

Licensees per Division are as follows:

VK1 — 14; VK2 — 1.92; VK3 — 2.28; VK4 — 2.68; VK5 — 7.49; VK6 — 6.79; VK7 — 3.87.

In producing these percentage figures I have also included general satisfaction with the contest although some did suggest minor changes to the rules. Here are some examples:

Had a marvellous time sharing VK7SA in middle of a contest. Of particular interest was the contact of VK7SA with VK3WIA — VK3WPI.

The proposal is as follows — that Western Australia, for the purpose of contests such as the RD Contest, be divided up into two parts; eg north and south of the 26th parallel. The contest would then be divided into two zones — VK6MV on behalf of the Peel Amateur Radio Group.

The RD Contest is a little different to the others in that it is the friendly contest — VK3KF.

I do appreciate being able to submit a receiving log — L3RO.

The contest from Christmas Island was hard work for the three operators, as om 40 and 80 metres we could hear the calls of other stations not break through their high noise levels — VK9XZ.

May I preface my comments by saying that I realise, regarding the amendments to the rules, you will probably not please everyone — VK6PV.

However, I would like to see a two-hour, instead of three-hour break on VHF — VK6R.

Congratulations on the setting out of the rules in July Article. I think they’ve been a long time coming — VK6WZ.

In a small community where there are only six or eight dedicated VHF operators, it is not easy to make a minimum of 25 contacts — VK6DM.

Thanks for bringing the club calls back into the RD — VK6GO.

The one point — one contact rule has shown to be advantageous in those remote areas . . . I’m sure that if my OSO had taken some effort it would have been made to pass numbers — VK6CY.

Congratulations on the best organised RD Contest for a considerable number of years — VK6E.

My first attempt at a contest with my full call . . . found out why it’s called the Friendly Contest — VK6AT.

I would suggest a SSB OSO was worth more than a “local” OSO some effort should be made to pass numbers between as many call areas as possible by awarding multiplier points on the number of call areas worked per band — VK6AJ.

The separation of HF from VHF was a good idea — VK6T.

VHF and HF categories. I think this is a very good idea . . . differential points. I have never enjoyed the HF sequence. In the past it has meant more points for other stations hence encouraged me to reduce participation — VK2BHO.

I would appreciate if you would consider as last year, VK1KAL, President VK1 Division.

VK1KAL — VK1KAL, President VK1 Division.

2.68; VK5—7.49; VK6—6.79; VK7—3.87.

VK1 — 14.3; VK2 — 1.92; VK3 — 2.28; VK4 — 2.68; VK5 — 7.49; VK6 — 6.79; VK7 — 3.87.

VK4 was worth five points and 10 six points, there was much more stirring to contact the rarer stations. I would like to see two hours instead of one hour — VK2BOS.

The present rules seem to be reasonable enough and the separation into categories and sections is a good idea — VK6Q.

I am delighted with the new rules which make HF and VHF two separate categories. The HF rules, in my opinion, are great, however, you were a bit tough, I feel, in reducing the interest — VK2BOS.

Back to the idea of promoting OSOs — VK6PV.

I would have been made to pass numbers — VK6R.

This time it is Certified Mail — VK3AH.

The rules themselves were quite acceptable and if not changed would suffice for the future. However, you were a bit tough, I feel, in reducing the interest — VK2BOS.

Two hours between contacts, this I feel would have given us a better result on VHF — VK3SBG for Moorabbin and District Radio Club.

As always, I enjoyed the RD, but lower activity does reduce the interest RA — VK2BNO.

Enjoyed the spirit of the thing . . . did not have occasion to find fault with anyone’s operating procedures or behaviour during my 1985 attempt — VK6KY.

I would suggest a SSB OSO was worth more than a “local” OSO some effort should be made to pass numbers — VK6R.

If the handicapping is done correctly, not only should all the call areas finish with the same totals, but every contact should be to the effect that VK9XZ is not the only one who would have made a considerable number of contacts. Jim’s letter contained a great deal of other useful comment. Don’t want to contemplate such a radical rule change — VK6CY.

If the 2LS made an effort by being more active, would it be possible for a second place to win the trophy? — VK2ANO

(Oho No. John, No. 50.)

The XXX is a new rig and I found the selectivity a bit disappointing — or is a signal VK1KAL away quite so much? — VK6KL. (Depends how strong it is, SQX.)

The use of dual call signs should be encouraged as it meant more points for other stations hence encouraged participation — VK1KAL, President VK1 Division.
As the FCM, I am responsible to the Federal Council, via the Executive, for my actions and I naturally follow WIA policy in carrying out my allocated duties. Should anyone have strong feelings about matters affecting this contest, but any of the WIA sponsored events, I would suggest that you work through your proper channels as a member of our national body and contribute to informed discussion via the democratic forums of our organisation.

So much for my ‘soapbox’ but, sometimes such comment is necessary. The variable succeptibility of NT and SK to “Remembrance” may mean to some people ... Far be it for me to ‘make a mountain out of a molehill’, but, to me, his actions leave much to be desired. I agree whole-heartedly with Greg’s sentiments and cannot help but say that it is all too sadening to see an increasing general lack of respect in this day and age for some of the higher values which should be cherished.

I would like again to commend the majority of operators who submitted logs of quite reasonable standard in this Remembrance Day Contest.

Congratulations to all those who took part and particular praise to those who participated despite little support from their contemporaries. A letter from the VK2 Division Federal Councillor queried the fact that only one VHF log was listed for VK2, I agree and assure you that only one log was submitted in that category which met the required minimum number of contacts.

I have also received several letters from operators from the VK2-area whose logs were among those not listed in the top 23 shown above. With only one exception, the letters were polite to a point and I do very much appreciate the consideration in the way they have been corresponded even when they may have suspected I had made a mistake. I will endeavour to reply to these letters at a later date. As regards this Remembrance Day Contest, I will be considering a few possible minor rule changes, as well as adopting a slightly different method of dealing with all the logs. This should be a case of third time lucky and having gained all this experience, I will then find that it will be my last Remembrance Day Contest as Federal Contest Manager.

RESULTS FOR 1985 ROSS HULL MEMORIAL VHF/UHF CONTEST

The overall top scorer is Les VK3ZBJ.

This year there has been a reasonable increase in the number of logs submitted for this contest. There were 11 competitive logs accepted, four check logs and one log which was unfortunately not acceptable in the form presented. However, it is quite obvious that this contest is not well supported and I wonder just what one has to do to gain the required respect. I would point out quite clearly that all claims of interest and participation are completely nullified when the Contest Manager sees only a mere check logs and one log which was, unfortunately, I would point out quite clearly, that all claims of interest and participation are completely nullified when the Contest Manager sees only a mere check logs and one log which was, unfortunately, I would point out quite clearly, that all claims of interest and participation are completely nullified when the Contest Manager sees only a mere check logs and one log which was, unfortunately, I would point out quite clearly, that all claims of interest and participation are completely nullified when the Contest Manager sees only a mere check logs and one log which was, unfortunately,
Major Mitchell Award

In 1836 Major Mitchell started on a journey from Sydney to a point on the Murray River near the South Australian border. After exploring the area, the next part of the expedition was to travel upstream along the Western banks of the Murray. On the 20th day of June, 1836, Mitchell and his party camped on a sandy riverbank, close to thick woods, cut away by the noise of waterfowl, mostly black swans. The next morning Mitchell wrote in his diary: "I therefore named this isolated and remarkable feature Swan Hill . . .

In 1836 Major Mitchell started on a journey from Sydney to a point on the Murray River near the South Australian border. After exploring the area, the next part of the expedition was to travel upstream along the Western banks of the Murray. On the 20th day of June, 1836, Mitchell and his party camped on a sandy riverbank, close to thick woods, cut away by the noise of waterfowl, mostly black swans. The next morning Mitchell wrote in his diary: "I therefore named this isolated and remarkable feature Swan Hill . . .

Here in VK5, we are celebrating the 150th anniversary of the founding of South Australia, and in particular, as already announced, there is an award for working the required number of VK5 stations during 1986.

On the other side of the world, the Zurich Division of the Union of Swiss Short Wave Amateurs (USKA) is celebrating 1986 as the bi-millennium of the town of Zurich, with a special certificate named the Zurich Major Mitchell Award.

This award is available to any licensed amateur (or SWL), who, during the year 1986, works (or hears) the required number of stations in the canton of Zurich. Australian stations are required to work/hear four stations, two of which must be in the actual town of Zurich. The club station HB9Z and I will send you a copy.

Details of these awards were published in AR as follows:

Tamar Valley Award — November 1984
Worked All Tasmania Award — December 1984
Reproduction of WAT certificate — April 1985

Also, please note the following additions:

If you do not have access to these, please write to Ken Hall VKSAKH, St George's Rectory, Alberton, SA 5014.

Reproduction of WAT certificate — April 1985

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program of the Royal Naval Amateur Radio Society. I subsequently sought corresponding information from the brother/sister organisations, the RAF Amateur Radio Society and the Royal Signals Amateur Radio Society. The quick answer is that the RAFAMS and the RSARS awards are only available to members of the respective societies. So the first step, if you are eligible, is to join. The respective addresses are: Administration Secretary, RAF Amateur Radio Society, Royal Air Force Locking, Weston-super-Mare, Avon, BS24 7AA, England, and Mr A W W Timme G3CWV, 287 Gillroyd Lane, Heights, Linthwaite, Huddersfield, HD7 5SY, England.

**BFRA AWARDS**

Six attractive certificates are available from the Bulgarian Federation of Radio Amateurs to amateurs worldwide for two-way contacts or SWL reports on all bands/all modes.

Applications of a GCR list of claimed QSOs verified by two licensed amateurs, or the local club authorities specifying stations worked; date; time; band and mode, together with a fee of 10IRCs should be sent to the Central Radio Club, PO Box 830, Sofia 1000, Bulgaria.

**Black Sea Award** — This award is valid for QSO/SWL reports after 1st January 1979, with 60 different amateur stations located in the countries bordering the Black Sea. A minimum of one QSO/SWL report with each of the following countries is an additional condition — LZ; TA; VO; UA6 and UB.

**Sofia Award** — Valid QSO/SWL points after 1st January 1979 — 100 points for reports with amateur stations situated in the Bulgarian capital, Sofia. The calculation of the points has to be made from the following table.

| Each single contact is worth 15 points on 3.5MHz; 5 for 7MHz; 1 for 14MHz; 2 for 21MHz and 3 for 28MHz. NOTE: One contact per band irrespective of mode. Some of the more active stations in Sofia are: LZ9 — KAAA; KAB; KFP; KPS; KSA; KSF; KTV; KWF; AB; AD; AM; AP; AO; AU; BC; FF; FN; IA; JW; KX; LB; MS; NP; OG; QL; QQ; SS; UA; UB; WV; WD; WJ; XX and ZQ. People’s Republic of Bulgaria — 20 QSOs with different Bulgarian amateur radio stations: 10 with LZ1 and 10 with LZ2 irrespective of band. 5 Bands LZ Award — 10 QSOs, one with LZ1 and one with LZ2 on all bands; 3.5, 7, 14, 21 and 28MHz. W 100 LZ Award — 100 QSOs with different LZ SWL stations during one calendar year. W 28 Z ITU Award — This award requires QSOs/SWL reports with the following countries of ITU Zone 28: DL; DLF/7W Berlin; FCTK; HA; HBF; H80; HV; I; IS; LZ; 9A/M1; OE; OK; SP; SY; SV5; SV9; SY; VO; YU; YZ; ZA; ZH; 4U1ITU. The award is issued in three classes:

| Class 1 — 28 QSOs with different stations in 20 countries |
| Class 2 — 28 QSOs with different stations in 16 countries |
| Class 3 — 28 QSOs with different stations in 10 countries |

An additional five QSOs with different LZ stations are also required.

* The above awards may be claimed when sending logs for the LZ DX Contest — see Contest Column for rules of this contest.

**NATIONAL CO-ORDINATOR**

Graham Ratcliffe VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commercials: 1000 UTC
Winter: 3.685MHz — Summer: 7.064MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
1405MHz
AMSAT SW PACIFIC
2200 UTC Saturday
21280/28.87MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

**ACKNOWLEDGEMENTS**

This month we are indebted to AMSAT-DL for the draft specification of the RUDAK Experiment to be flown on the Phase-3C spacecraft. As mentioned in last months column, I have edited this specification to make it presentable for this column. Those persons wishing to peruse the complete document can obtain one by contacting Graham VK5AGR, QTHR. At the time of preparing these notes, I noted a block of OSCAR 10 indicating that the RUDAK flight unit had been completed and the initial contacts made through it. It does indeed appear to be an interesting experiment to follow when Phase-3C is launched later this year. It is currently scheduled for September.

**RUDAK SPECIFICATION DRAFT — 15th May 1985**

General — This document has been compiled for, and on behalf of AMSAT-DL eV by Hanssper Kuhlen DK1YQ.

Comments are invited and shall be addressed to the author: H Kuhlen DK1YQ, Finkenstr 11, D-80118 Munich, FR Germany.

Introduction — This document specifies the digital experiment scheduled to be launched onboard AMSAT OSCAR Phase-3C satellite with Ariane IV. Its main purpose is to provide a comprehensive documentation on the technical requirements and desirable features to achieve a common understanding among the equipment designers and manufacturers, as well as the satellite system group.

**SATELLITE ACTIVITY FOR PERIOD 1 TO 28 DECEMBER 1985.**

1. **LAUNCHES.**

The following launching announcements have been received:

<table>
<thead>
<tr>
<th>Date</th>
<th>Satellite</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-11A</td>
<td>Cosmos 1705</td>
<td>Dec 03</td>
</tr>
<tr>
<td>112A</td>
<td>Cosmos 1706</td>
<td>Dec 11</td>
</tr>
<tr>
<td>113A</td>
<td>Cosmos 1707</td>
<td>Dec 12</td>
</tr>
<tr>
<td>114A</td>
<td>USA 13</td>
<td>Dec 13</td>
</tr>
<tr>
<td>114B</td>
<td>USA 14</td>
<td>Dec 13</td>
</tr>
<tr>
<td>115A</td>
<td>Cosmos 1708</td>
<td>Dec 13</td>
</tr>
<tr>
<td>116A</td>
<td>Cosmos 1709</td>
<td>Dec 19</td>
</tr>
<tr>
<td>117A</td>
<td>Molniya 3-27</td>
<td>Dec 25</td>
</tr>
<tr>
<td>117B</td>
<td>Cosmos 1710</td>
<td>Dec 25</td>
</tr>
<tr>
<td>118A</td>
<td>Cosmos 1711</td>
<td>Dec 25</td>
</tr>
<tr>
<td>118B</td>
<td>Cosmos 1712</td>
<td>Dec 25</td>
</tr>
<tr>
<td>119A</td>
<td>Meteor 2-13</td>
<td>Dec 26</td>
</tr>
<tr>
<td>120A</td>
<td>Cosmos 1713</td>
<td>Dec 27</td>
</tr>
<tr>
<td>121A</td>
<td>Cosmos 1714</td>
<td>Dec 28</td>
</tr>
</tbody>
</table>

2. **RETURNS.**

During the period forty three objects decayed including:

<table>
<thead>
<tr>
<th>Date</th>
<th>Satellite</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985 101A</td>
<td>Cosmos 1699</td>
<td>Dec 23</td>
</tr>
<tr>
<td>1985 109A</td>
<td>STS 61B</td>
<td>Dec 03</td>
</tr>
<tr>
<td>1985 115A</td>
<td>Cosmos 1708</td>
<td>Dec 17</td>
</tr>
<tr>
<td>1985 115A</td>
<td>Cosmos 1708</td>
<td>Dec 27</td>
</tr>
</tbody>
</table>

3. **GENERAL.**

As at 0142 UT on 14 Dec 1985 satellite ATS 1 was located at 82.61W, Inclination 11.93°.
The experiment has been named RUDAK for Regenerative Transponder for Digitale Amateurfunk Kommunikation.

The mission shall serve two purposes —

1. Point-to-point connections utilising the AX.25 link protocol
2. In as much as possible inter-connec Local Area Networks (LAN) to accomplish a low rate, time shifted data/message exchange, ie link between mailboxes.

The RUDAK Experiment shall support digital communication and trials with link control protocols and other processor based technique.

Highest possible flexibility with regard to future higher level protocols will be achieved by fully re-loadable RAM-resident software.

System Description — The growing interest in digital communication in amateur radio necessitates a satellite channel for investigations on typical channel characteristics, as well as gaining experience in digital operating modes.

System Architecture and Network Configuration — The number of individual subscriber stations of equal priority in a widely spread area. Each station is equipped with RF facilities and a dedicated processor called terminal node controller, or equivalent S/W and a display and/or a general purpose computer. The latter is not required for QSC-type of communication.

At present, several local area networks (LAN) with a limited number of participants are in the process of realisation world-wide. Most of these networks are supported by digipeaters acting as link controllers connecting amateurs with critical RF-links.

Except for the digipeater function, the applied protocol AX.25, Version 2.0/10.84 enables link establishment in accordance with level 2 of the ISO-OSI Reference Model providing sufficient commonality among the participants during the absence of an appropriate level 3 and 4 Transport Protocol.

Inter-connection of individual stations is the typical future however, the unique technical features of the packetised transmission become obvious only in a meshed network.

One important characteristic of a network is its ability of quick response to a service request, ie to send a QSO-packet from A to B (throughput).

On one hand, this response time is dominated by the applied bit-rate. For terrestrial networks, this parameter has been selected as 1200 bit/s to cope with bandwidth characteristics of standard amateur equipment by utilising straight-forward FSK for channel coding.

On the other hand, the conflict of sending packets into the net without precise co-ordination results in loss of packets due to collision.

For a subscriber having access to a common network, the uplink bit-rate has been selected as 400 bit/s.

However, due to unavoidable collisions we elevate geographical positions, hence visibility over a fairly great distance. Here the competition of packets will be solved by generating random time shifted data/message exchange, ie link controller operation.

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However, due to unavoidable collisions we elevate geographical positions, hence visibility over a fairly great distance. Here the competition of packets will be solved by generating random time shifted data/message exchange, ie link controller operation.
over great distances. One of its most peculiar characteristics is the fact that the channel is not transparent as it is the case with the more familiar linear transponder, but it is regenerative.

Regenerative means full demodulation and decoding of the uplink signal and re-generating a new (composed) downlink signal with no change in packet content, but with added features. Full transparency as it is the case with the more familiar L-band transponder, but it is

As a minimum.

The ambiguity of the received and decoded BPSK-signal may lead to a 100 percent error condition due to inversion of the restored reference phase (Spectrum shaping).

Hence, not the absolute phase condition provides the 0 or 1 information, but the difference of the phase of two consecutive bit periods.

Independent from the AGC of the main pass the RUDAK-Experiment will get its own channel for operation within the constraints of the L-band transponder.

The link budget calculations as summarised in chapter 7.2 have been based on a link quality of 1200 bit/s.

The link budget calculations as summarised in chapter 7.2 have been based on a link quality of 1200 bit/s plus a 256 bytes (optionally 256 bytes) by the software processing (assembly/disassembly) shall be in the packet data stream.

There will be a continuous operation of the downlink beacon whenever the L-mode is activated. This under all detrimental circumstances leaves sufficient time to synchronise to carrier and bi-clock, even for the less skilled user.

In order to avoid long periods of idle pattern, which would be required to maintain synchronisation a sequence of cyclic repeating information packets will be inserted into the data stream.

These packets will contain identification details of the satellite, telemetry blocks in open language with extracts from the normal housekeeping TM with continuous updates, kepler and other orbit information, etc.

RUDAK Experiment — The hardware of the RUDAK-Experiment will be housed in a single metal box. Three interfaces interconnect RUDAK with the rest of the payload: DC Power Supply; L-Transponder; Integrated Housekeeping Unit.

It receives digital information from the dedicated BPSK demodulator as data and coherent clock signal. After processing the downlink signal is generated as data EXORed with the clock and routed to the phase modulator of the 436.020MHz transmitter.

Packet radio in its present form only provides error free communication by application of error detection and, if necessary, automatic request for re-transmission with an appropriate ARQ packet.

The RUDAK-Experiment shall support potential forward error correction (FEC) of at least singular errors.

Any possible link improvement by means of soft decision decoding versus hardware complexity will be investigated and if feasible be considered as a valid and desirable option. The entire packet processing (assembly/disassembly) shall be in compliance with the AX.25 link level protocol specification as released Version 2.0.10.84.

An appropriate packet management software shall organise incoming and outgoing packets, decide on priorities between user packets and onboard generated information.
**NAOCP Theory**

Following is a trial examination paper for Novice Theory. Answers appear at the end of the column.

1. A solenoid could be used:
   a. as part of a keying relay.
   b. to vary the frequency of a tuned circuit.
   c. as an impedance matching device.
   d. as a voltage stabilizer.

2. In an SSB transmitter the output frequency is obtained by:
   a. selecting any even harmonic.
   b. using multiplier stages.
   c. filtering.
   d. heterodyning.

3. The velocity of a wave in a transmission line is:
   a. 300 000 000 metres per second.
   b. 8 000 000 metres per second.
   c. less than its velocity in free space.
   d. more than its velocity in free space.

4. The potential difference between A and B is:
   a. 12 volts.
   b. 6 volts.
   c. 6 volts.
   d. 4 volts.

5. In a thermionic vacuum tube the high voltage is applied to:
   a. cathode.
   b. heater.
   c. control grid.
   d. anode.

6. P type semi-conductor material has:
   a. surplus electrons.
   b. surplus ‘holes’.
   c. a residual positive charge.
   d. a residual negative charge.

7. The modulation percentage of an AM transmission can be calculated from:
   a. carrier voltage and total power output.
   b. modulation voltage and carrier frequency.
   c. the pattern displayed on a cathode ray oscilloscope.
   d. carrier amplitude and modulation frequency.

8. Direct keying of an oscillator stage is likely to produce:
   a. key clicks.
   b. splatter.
   c. chips.
   d. harmonics.

9. This filter is known as a:
   a. low pass.
   b. high pass.
   c. band rejection.
   d. band pass.

10. To increase the DC voltage range of a meter its circuit should be modified as shown:
    a. b.
    c. d.

11. The solid state equivalent of a gaseous regulator tube is a:
    a. bridge rectifier.
    b. FET.

12. The detector in an AM only receiver could be a:
    a. diode.
    b. beat frequency oscillator.
    c. product detector.
    d. heterodyne detector.

13. The bandwidth of a correctly modulated AM signal is:
    a. half the modulating frequency.
    b. carrier frequency + modulating frequency.
    c. twice the modulating frequency.
    d. three klicker.

14. Interference caused by an amateur transmission is heard on a small portable broadcast receiver but not on a more elaborate receiver. The interference is probably:
    a. not noticeable in the higher sound output from the larger receiver.
    b. due to parasitic oscillations in the final stage of the transmitter.
    c. not reduced by using an external antenna on the small receiver.

15. The feedline on a Yagi antenna is connected at the:
    a. reflector.
    b. director.
    c. driven element.
    d. boom.

16. Which of the following is not an electrical insulator?:
    a. mica.
    b. ceramic.
    c. sea water.
    d. oil.

17. The impedance of a transmission line:
    a. is a maximum at each quarter wavelength point.
    b. varies according to whether or not it is terminated in a load.
    c. depends on the diameter and spacing of the conductors.
    d. is purely resistive.

18. If two bar magnets are placed close together, the forces will be as shown in:
    a. attraction.
    b. repulsion.
    c. attraction.
    d. repulsion.

19. The total impedance of the circuit will depend on the:
    a. input voltage.
    b. current flow.
    c. capacitor dielectric.
    d. applied frequency.

20. When a triode amplifier is operating in class A mode current flows:
    a. all the time.
    b. for half of each cycle.
    c. for less than half of each cycle.
    d. whenever the grid voltage is beyond cut-off.
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### Intruder Watch

**Bill Martin VK2COP**

**FEDERAL INTRUDER WATCH CO-ORDINATOR**

33 Somerville Road, Hornsby Heights, NSW. 2077

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**CW FOREVER**

You must have at times, thought into the past, when others came and went, and wondered what comes to your mind is the old Morse Code. That has weathered the storms from any abode. To talk with one's fingers is surely an art, of course not for all those who are not in it. In most conditions the signals get through, while the same about phone is simply not true. Those dits and dahs cut through the trash, of nearly noise or lightning's flash, to the sensitive ears of the ham receiver, who records this data with ardent fever. He knows he's doing something unique, (in such poor conditions, that's quite a feat). To Roger the message that came of the air. These Brass Pounders sure do have that flair. They say Morse ops are a dying breed, but don't despair, there's always that need. That when conditions get rough for the new automation, rest assured, there'll be need for your station. CW is dying? Believe it never. This mode will be around forever and ever, but one thing is sure, we'll need to relay our knowledge to the younger breed. To talk with one's fingers is surely an art. This mode will be around forever and ever, and be in the earth lead, have a high impedance, be in the active lead. The value of a resistor colour coded yellow, violet, red and silver is about: 4.7 kohms. 470 ohms.

---

**ANSWERS TO NOVICE TRIAL EXAMINATION**

1. **ANSWERS**
   - 1a 11d 21b 31a 41a
   - 2a 12d 22b 32c 42c
   - 3a 13b 23c 33c 43b
   - 4a 14c 24b 34d 44b
   - 5a 15b 25c 35c 45c
   - 6a 16d 26b 36a 46b
   - 7a 17b 27c 37d 47b
   - 8a 18d 28b 38a 48d
   - 9a 19d 29b 39c 49d
   - 10a 20b 30a 40c 50a

---

**Fire-up on 14.024MHz, and see if you can find out who is there. It has been heard at 0646 and 0900-1200UTC.**

**CW and SSB MIXED!**

I recently had a complaint about SSB stations working on the CW segment of 15 metres. This is not our interest to the Intruder Watch, but it is unfortunate to see that people cannot observe the Gentleman's Agreement and WIA Band Plans, and to avoid conflict with others in the hobby. The intruder Y5K, an old friend (I), who works RTTY on 20 metres, has finally been caught at the receiving end, which was T/7S on 13.342MHz. The Voice of Greece, beaming to Australia on 7.095MHz, has now apparently moved to 7.420MHz, well out of our way, and one wonders why they did not operate there in the first place??

---

**NUPTIAL BLESSINGS**

I don't know if I am letting the cat out of the bag on the next piece of news, but Robin VK7RH, the Tasmanian Intruder Watch Co-Ordinator, writes to tell me that he will be very busy this year, as he is moving OTH due to the fact the he is getting MARRIED!!

Well, Robin didn’t tell me not to say anything, so there it is. All the very best to you, and the future Mrs Harwood, Robin. I am sure I speak for all involved in the Intruder Watch.

Better go before I get chased away from the keyboard. See you all next month, and good DX.

---

**ARRL 75TH ANNIVERSARY**

The ARRL Board have taken two actions regarding forward planning for the ARRL’s 75th Anniversary in 1989. ARRL will offer to host the 1989 Triennial IARU Region 2 Conference. The criteria for selecting the 1989 ARRL National Convention was adopted. Final selections will be made at the Board’s July 1986 meeting.
The first quarter of 1986 is behind us — Where did it go?

It is pleasing to see ALARA continuing to grow and flourish, with increasing YL participation in every facet of amateur radio activity. We have enjoyed the good fellowship from the days when a YL voice on the airwaves was a rare thing to hear.

This month I would especially like to congratulate ALARA’s Newsletter editor, Marlene VK5CO, who was the recipient of the Alan Shawsmith Journalistic Award, 1985, for her article on the editor, Marlene VK5QO, they had both attained the necessary points on here print an update of Award recipients, so accordingly we would like to thank Ash for his most detailed and comprehensive effort.

Obviously there are bound to be additions and omissions - if you have any information that you feel should be included, please let me know.

The ALARA Award, with its lovely Australian print, was sponsored by Jill VK4ASK. As previously reported in Amateur Radio, February issue, an agenda item discussed at the recent Region 3 Conference in New Zealand, was a proposed change in frequencies and operation of the CW section is held from 1800UTC on 9th April to 0030UTC on 10th April. Mary KE5UO, who joined on 10th February 1986, was sponsored by Josie VK4VAN.

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NEW MEMBERS

Welcome to new members — Lee ZS1YL, who joined on 27th January 1986 and was sponsored by Bev VK6DE. Marion WATTLL, who joined on 29th January 1986, and sponsorship by Joe VK4AV.

Mary KESUO, who joined on 10th February 1986, was sponsored by Jill VK4ASK.

CALL SIGN CHANGES

Paula DJ0EK is now PA0ULA and Alma VK3PIP is now VK3BAO. Congratulations on the upgrade, Alma.

Until next month, 73/33 — Joy VK2EBX.
Spotlight on SWLing

Robin Harwood VK7RH
S Helen Street, Launceston, Tas. 7250

Another domestic shortwave broadcasting service commenced on the 20th February 1986. It is in the ABC Northern Territory Service, with three transmitters which are located at Alice Springs, Tennant Creek and Katherine. Each sender is designed to cover about 450 square-miles, designed to overcome the gaps in coverage within the vast expanse of the Northern Territory, with a vertically polarised tropospheric-scatter array.

NOT A 24-HOUR SERVICE

Programming will mainly concern the MW Service, plus specific programming for the Aboriginal community. At present, only the Alice Springs transmitter is operational. To take account of the propagation variations, the service will close down at mid-night Central Standard Time.

LIMITED EXTERNAL SERVICE

Yet another nation is reportedly embarking into external broadcasting — Zimbabwe has notified the IFRB that it intends to commence broadcasts to the Far East, Africa, Europe and the Americas shortly. When the country was known as Rhodesia, there was limited external service to relay their viewpoint at the height of the blockade against Rhodesia in the 60s and 70s.

United Nations Radio, in New York, has gone silent recently. This is due to the increase in rental of the VOA transmitters. I believe that programming from UN Radio continues with tapes being sent to other broadcasters to include in their programming.

SIGNAL STRENGTH GOOD

Recently I came across a new country on shortwave. It is Syria and although it has been operational for a number of years, it happened to be the first occasion I have heard it in English. It is easy to hear when their standard allocation of 7.455MHz from 2100UTC, in English, with very good signal strength.

Another Middle Eastern country coming in well is Iraq, Baghdad 9.745MHz in parallel. The best time to listen is around 0500UTC. The country is still engaged in a prolonged conflict with Iran and its programming reflects this fact, with frequent battle-sounds interspersed in the music and announcements.

LINGUA FRANCA

I do find it somewhat difficult identifying Arabic speaking stations. As it is the lingua franca for the region, naturally the majority of programming reflects this. Some do have English, or French broadcasts, yet their diction is often extremely difficult to comprehend, as the use of English or French is not as widespread, as with other regional areas. Also some nations are trying to reduce western influence, particularly where there is a strong Islamic fundamentalist support. Hence, there is a strong incentive to concentrate on Arabic or other regional dialects.

DIFFICULT TO LEARN

Arabic is a particularly difficult and complex language to learn, particularly where there is a strong Islamic fundamentalist support. Hence, there is a strong incentive to concentrate on Arabic or other regional dialects.

Many international and domestic services employ Interval Signals or signature tunes, to readily identify the station or program. Our own Radio Australia is easily recognisable by Waltzing Matilda which is played by a synthesiser. Other broadcasters also have different Interval Signals for specific broadcasts/programs. For example, the BBC World Service is well-known for the sound of Big Ben which is familiar to any Cockney. For their European Services a synthesiser plays V ...—. This was used in WWII on broadcasts to occupied Europe, when it was played on a kettle-drum. For other services, the synthesiser plays the notes BBC.

OTHER IDENTIFICATIONS

Most should be readily familiar by now with Radio Moscow's Interval Signals as well as other Soviet stations. A sound interval signal has a similar sound; eg all Indian Radio and Radio Pakistan. I often still get caught because of the almost identical interval Signals. It does take practice to tell the difference. I believe the Radio Beinadesh also had similarInterval Signals to the above, but I think they have since altered it. Others, such as Radio Beijing, have a separate Interval Signals at the beginning and the conclusion of their scheduled transmissions.

HELPFUL EDITION

An indispensable aid to the DXer or SWL is the World Radio TV Handbook. The 40th Anniversary Edition was recently published. The cost has increased to around $438, although some who ordered through bulk ordering were able to reduce this a little. This 630 page book has all the regular features, listed by country, with stations, broadcasting organisations, and transmitte recorder included. There is also an article tracing the history of the WRTH from 1946 right up to the present day.

There have been improvements in layout, making it a little easier to find the country or region. A valid criticism has been that by the time it has been published, some of the information is obsolete. This is unavoidable, as the virtual explosion of stations and broadcasters in the past 15 years has made it difficult to keep an accurate schedule, right up to the deadline. Fortunately, the WRTH publishes supplements coinciding with the seasonal frequency alterations in March, May and September.

For further information about the book write to PO Box 88, DK-2650, Hvidovre, Denmark.

Until next time, the very best of listening and 73, Robin VK7RH.

Eric Trebilcock L30042, joined the South Australian Division of the WIA in April 1939. Eric was admitted as “Associate Member No 5”. He transferred to the Victorian Division in 1949.

When Eric joined the WIA R B Caldwell was SA President, and SA Secretary. Federally, H K Love was President and Bruce Hardie was Secretary.

Eric, and his late wife Gane, conducted the VK3 Inwards QSL Bureau for many years and Eric was granted Life Membership of the WIA in recognition of his services to the Institute.

Eric, and his bride Aline, have just returned to Victoria after an absence of five months and one can be assured Eric will be “tuning around the CW bands”.

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Williams Printing Service Pty Ltd

A Call to all holders of a

AMATEUR RADIO, April 1986 - Page 49
It was a pleasant surprise to see the wealth of CW-related material in the January issue of Amateur Radio. Although, on second thought, the news that the International Maritime Organisation (IMO) plans to phase Morse out in favour of digital communication systems rings a few alarm bells. There are parallels with amateur radio, insofar as those with the dollars will undoubtedly benefit by having easier means of communication, while those who cannot afford the state-of-the-art equipment will, inevitably, suffer from degraded service; those who understand radio and the capabilities of CW will be scorned by the button-pushers.

The move appears, at first sight, to make sense—but it begs a lot of faith in some fairly advanced technology. We all know the risks that go with anything that is automatic, or operates at the touch of a button. I just spent two nights stripping-down an automatic washing machine, which had a broken gear. At least it was capable of being fixed, assuming I can obtain the replacement gear from Sydney.

Most of us who have sailed the high seas at some point or another would, I suspect, feel a lot safer if time or another would, I suspect, feel a lot safer if there is a competent Morse operator on board, assuming I can obtain the replacement gear from Sydney and have sense enough not to impose Cinderella technology by programming maritime computers to communicate in Morse code! (unlike some amateurs, I know).

It is interesting to note, however, that the IMO has gone as far as not to impose Cinderella technology by programming maritime computers to communicate in Morse code! (unlike some amateurs, I know).

If I can be pardoned for changing course by a few degrees, What’s Your Problem? in an Adelaide morning newspaper are still dispensing wisdom (remember the two-prong to three-prong voltage adapter?). This time a reader asked about the last use of Morse telegraphy in South Australia and Australia. The South Australian part may have been right—Kalangadoo to Adelaide on Saturday, 3rd March 1962, but I don’t think the “last Morse code message in Australia was between Roeburne to Onslow and Wittenoom Gorge, Western Australia, in November 1968”.

According to Jim Linton VK3PC, December AR, the last Morse telegraphy link in Australia, to Lord Howe Island, did not close until 1976. I wonder what the last message was...

One would suspect that the Lord Howe Island link was by automatic-machine Morse, and perhaps the WA link was, as well. Any further information on the last manual telegraphy links would be appreciated (quoting sources, if possible).

The January edition of this column described semi-automatic mechanical keys in some detail, but did not say much about fully automatic (dot and dash) devices. I apologise for the oversight—"I had intended to say that they were never very popular because they were extremely complicated mechanically, expensive and usually could only be used at one speed. In fact, I have never seen one, but my friend, Tom Laidler VK5TL, rang to give me some more information on a locally produced model and invited me to have a look at it. He agreed with the reasons I put forward for them."

Tom says a fellow by the name of Norman Thomas developed one in Adelaide in the 1920s. The parts were made by Hitchcox Brothers, and Mr Thomas personally set-up and adjusted each one before shipment. He sold them all over Australia, at a price of 50 pounds ($100 in decimal currency). They were fixed at one speed, around 20WPM. I think Tom said, “(Do any other VK amateurs possess one of these units. Ed)"

Tom began his career in PMG telegraphy, in 1918, which gives him a wealth of experience to speak from.

To conclude the column this month, I would like to share a fascinating story: an eight-year-old daughter showed me the last Morse code message In Australia was...

“Morse code is a system of dots, dashes, and spaces that telegraphers in the United States and Canada once used to send messages by wire. The code was named for Samuel Morse, who patented the telegraph in 1840. The letters that occur most frequently in our language are represented by the simplest symbols.

"The dot is made by quickly pressing and releasing the key of the telegraph sender. This produces a rapid 'click-clack' sound in the receiver at the other end. A short dash is twice as long as a dot. A long dash is equal to four dots. The space between the dots and dashes that make up a letter is the same length as a dot. The space between the letters of a word equals three dots. A space that is part of a letter combination equals two dots."

"For years, all telegraph messages and most news were transmitted by Morse code. Now most such messages are sent by automatic facsimile and printing telegraph machines. Radio and telegraph operation in other countries once used International Morse Code, also called International and Continental Code. But facsimile and printing methods of sending messages are now more widely used."

73 and “click-clack” until next month.
Radio Amateur
Old Timers Club

HUNTER BRANCH DINNER 1960
The accompanying photograph was taken at the Hunter Branch Dinner in October 1960. The photograph features, from left: Dave Duff VK2EO, Federal Councillor VK2 Division; Gordon Sutherland, Branch Secretary; Lionel Swain VK2CS, Branch President; Wal Salmon VK2SA, Metropolitan Police Supervisor; Bill Lewis VK2YB, WIA President; George Riley, NSW Superintendent of Radio with the Postmaster General's Department; Max Hull VK3ZS, WIA Federal President; Allan Fairhall VK2KB.

RAOTC SECRETARY RESIGNS
It is with sincere regret we advise the retirement of Harry Cliff VK3HC, from the office of Secretary/Treasurer of the RAOTC of Australia. Indifferent health in recent months has precipitated Harry's decision.

As the inaugural Secretary and Treasurer of the Club, Harry has devoted a decade of time and energy to the Club, ably assisted by his wife Melsa. Out thanks are extended to them both with the fervent wish that they be spared to enjoy many years of the bracing air at Point Lonsdale, from where so much of the official office work has emanated for the past 10 years.

Harry Hepburn VK3AFQ, has kindly taken over from Harry and we welcome him to office. Please take note that all future correspondence should be addressed to Harold at 4 Elizabeth Street, East Brighton, Vic. 3187.

RAOTC TENTH BIRTHDAY
1985 celebrated the first ten years since the inauguration of the RAOTC, in 1975. Over this time, our membership has grown from under one hundred members, to over 800. Our formation was the brain-child of Bob Cunningham VK3ML, "to maintain interest and fellowship amongst amateurs who had held a license for 25 years or more".

Our steadily increasing membership, despite the inevitable Silent Keys, indicates there is a place in the scheme of things for such an organisation of Old Timers.

The RAOTC publication OTN, is issued annually to keep alive the stories, artifacts and amateur activities of those many decades when amateur radio was very much a 'do-it-yourself hobby'.

HOW TO JOIN THE RAOTC
Eligibility for membership is available to amateurs who have held, or been qualified to hold an amateur radio licence for a period of 25 years, or more.

Its objectives are to maintain interest and fellowship amongst the older licensed amateurs. It is affiliated with the Wireless Institute of Australia.

The joining fee is $15 for Australian amateurs, or $20 for overseas applicants, which should be submitted to the Secretary, Harold Hepburn VK3AFQ, 4 Elizabeth Street, East Brighton, Vic. 3187, together with the following information:

Date of original licence, Operator’s Certificate number, Original Call Sign or qualification held, Present Call Sign if original not now held.

An application form is available from the Secretary at the above address. It is required to be signed by a proposer and a seconder who are already RAOTC members.

Membership is only paid once! It entitles members to participate in all RAOTC on-air nets, social functions and a copy of the journal OTN. Members also receive a Club badge as part of the 'once only' fee. Donations may be called for occasionally to cover operating costs.

RAOTC QSO PARTIES
Two QSO Parties are held each year for members of the RAOTC and the Old Timers’ Club of New Zealand.

Eligibility: The Parties, in the form of contests, are open to members of the RAOTC and the OTC of New Zealand. Please note that there are members of the Australian Club in overseas countries, particularly the USA, who could possibly participate at the times laid down.

Contest Exchange: Members will exchange their Club membership number — VKs prefixed by A and ZLs prefixed by Z; Year of first license; Name; Age* eg Nr A256 1961 Bill 49 — Nr 212B 1923 Harry 78.

Scoring: One completed contact with a member on a single mode (SSB or CW), will score five points. Final Score: Contact points times multiplier.

Dates for the 1986 events are 10th March and 4th and 11th August.

Entries: Tally your claimed scores indicating mode (CW, SSB or VHF), number of QSOs and multipliers, preferably with a list of calls. This information should be forwarded to John Tutt VK3ZL, 11 Connongatta Road, Camberwell, Vic. 3124, as soon as possible after the first and third events.

A suggestion has been forwarded by the ZLs that the ‘Exchange’ be altered from the present numbering format, as above (A256 1951 Bill 49), to Nr. A256 Bill 5149, ie the final figure group being a combination of the year of the first licence, 1951, and age, 49.

Would you please give an opinion on this suggestion and forward it with your log for the March Party.

BEACON HELP WANTED
It is intended to increase the VK2RSY network of beacons. The next frequencies to be allocated are the 10 and 24GHz bands. Opinions from those who work in this region would be most welcome as to suitable frequencies and polarisations. Please write to the VK2 Division of the WIA, Box 1066, Parramatta, NSW. 2150.

VHF COMMUNICATIONS
VHF Communications Magazine will continue in 1986. Subscriptions will be as follows:

Air Mail ........................................ $17.00
Surface Mail .................................. $12.00
The Melbourne Packet Radio Group attended the Bendigo Convention on 16th February 1986, and set up a demonstration station. They were able to link into the Melbourne area via a digital repeater. Earl VK3BER in Frankston, along with John VK3ZVR and Mike VK3YBM, were the people viewing the demonstration at Bendigo, and Earl Russell VK3BER, were heard chatting through the repeater. Peter VK3AVE provided the Melbourne link.

The whole exercise was a resounding success as was anticipated. A few minor problems occurred such as when a plug was knocked out of the wall in St Albans, and the antenna at Bendigo fell onto the roof. During the day, Jim Linton VK3PC, at the Bendigo Convention, and Earl Russell VK3BER, were heard chatting through the repeater.

Much interest was generated amongst the people viewing the demonstration at Bendigo. Visitors to the Convention attended from Ballarat, Shepparton and Albury districts and it is hoped that Packet Radio operations will begin in these areas in the near future.

The Melbourne Packet Radio Group formed into a club in January 1986, as sufficient members became available, and during the year the club held many coming events similar to the Bendigo Convention. The club's digital repeater is now permanently located at Broadmeadows, and covers the greater part of Melbourne and is workable as far as Geelong and St Leonards. Reception reports of the repeater, heard on 147.600MHz at 15 minute intervals using 1200 baud data transmissions, would be most welcome.

For further information about the club write to Melbourne Packet Radio Group, Box 299, St Albans, Vic. 3021.

Contributed by Richard Donaldson VK3KCO

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Contributed by Richard Donaldson VK3KCO
Ideas were put forward by the President, of ways to promote the Branch and amateur radio to schools and the public in the hope of stimulating new interests in radio. The Clanger Award for this month, was presented to Jack VK7WJ.

The evening concluded with a video of a power station on the mainland which was filmed by Jack VK7WJ, during his holidays in 1985.

Contributed by Max Hardstaff VK7KY

**AR Showcase**

**GLOBAL RADIO BROADCASTS TO THE WORLD IN STEREO**

H D Norman, a 34-year-old Alabama native from the city of Opelika, is launching a new world-wide HF stereo radio station which he hopes will capture listeners from Australia to Zaire, and all countries in between.

NDXE Global Radio (pronounced In Dixie) has been several years in the making. Norman, who began as a radio station record librarian 28 years ago, conceived the idea with the late John Herbert Orr, who produced the first US manufactured magnetic recording tape and the Orrox CMX Video Editor.

As the world's first privately-owned HF stereo station, NDXE will offer programming that is totally different from the VOA, BBC, and other government-operated shortwave stations. NDXE's programs will feature live concerts, sporting events, world-wide phone-in shows, news, international weather and music by the world's popular recording artists — no political rhetoric.

Although HF transmissions have not been considered a viable medium for broadcasting commercial advertising, NDXE's super power 100kW stereo shortwave transmitter and 30m (100') rotatable log periodic antenna will deliver over three-million watts of power. Broadcasts will be beamed to the Pacific, Europe and the Americas.

NDXE will introduce a new measure of advertising, the Global Advertising Unit, which international advertisers can use to blanket the advertising message across all continents or to target a specific region. In addition they will operate a massive mail order business — listeners will be able to write or call the station to order goods from jeans to refrigerators.

Norman is brimming with ideas to attract listeners and is offering bumper stickers, license plates, coffee mugs, etc. Special listener prizes will also be offered. For instance, since SWLs collect QSL cards, NDXE will offer one — a 3D holographs card!

It is anticipated NDXE will begin operation on 4th July 1986, and Norman is hopeful of attaining the services of President Reagan to throw the first switch.

Further information may be obtained by writing to NDXE Global Radio Headquarters, PO Box 569, Opelika, AL 36801, USA.

**SCALAR INDUSTRIES**

The Scalar B20 lightweight VHF dipoles for 155-162MHz, are completely enclosed in a tapered fibreglass radome for complete protection from corrosion and precipitation static and do not require a ground plane.

The B20D is fitted with a fold-down bracket for deck installations and enables the antenna to be lowered for stowage.

The B20M is fitted with 100cm of anodised aluminium tube, and is suitable for mast mounting or board, or as a low cost shore base antenna.

The B20S is a lightweight variant suitable for single-hole mounting, whilst the B20G is a 3dB gain antenna suitable for base antenna applications.

The bandwidth is 6MHz, VSWR less than 1.5:1 and is terminated with three metres of RG59/CGU.

Scalar also have a comprehensive range of professional audio connectors, plugs and sockets, including 3.5mm and DIN connectors, 2, 3, 4, 5, 6, and 8 pin microphone plugs and sockets, in-line and panel-mount plugs and sockets, power terminals and connectors, TV and radio plugs and sockets, also fuse holders.

A range of wire also available includes speaker wire, phone cable, microphone cable and hook-up and multi-core cables in various colours.

The ARRA Microwave Training Kit, MT-1, has been designed for Military, College, Industrial and Vocational training courses in microwave technology and applications. The kit is a complete course in...
LISTENING AROUND

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

LISTENING TIME
As the servicemen on Morotai had other duties rather than listening to their portable battery radios, and because the record library only had 2000 discs, the transmitting hours of 9AD were somewhat restricted. We normally awoke at 6am to start the generators, put power to the transmitter, check the turntables and wake the duty announcer. The early morning program went to-air at 6.30am, and continued until about 9am. The evening version was from noon 6 pm and again from 5.30 to 10pm.

On one particular morning, I started the generators and then decided to make a cup of tea before waking the announcer. I filled the electric jug, plugged it in and as soon as I threw the switch there was a flash. Ah-ha, I thought, there is something wrong with the jug, so I decided to pass on the cup and check the turntables instead. They would not turn, it was evident that a fuse had blown and I didn't know where the fuse box was — and on-air time was approaching fast. I made a mad dash for the chief technician's tent. With minutes to spare, he began to rectify the situation whilst I went to wake the announcer. The session went on air on time although the announcer was dressed in his pyjamas.

A HAPPY TIME
Christmas night 1945, was a happy time with the 9AD auditorium full of service men and women, many of whom rendered songs or played musical instruments over the air for those who could not attend. Many favourite songs were requested, some being Bing Crosby's White Christmas, When you wish upon a Star, and the Andrew Sisters' song Don't Fence me in.

New Year's Night is another which is difficult to forget. The duty announcer was inebriated as he had had quite a number of bottles of alcohol with him in the studio. The visiting Sergeant-Major to monitor the disc the day before, he began to annoy him and he ordered them to leave, but they were hesitant to go. As he played more and more records, the visitors became louder and louder, and began to annoy him so he eventually pushed them all out the door and began to smash each record on the floor commenting as he went "Now we've all heard that record so often that I'm sick and tired of it — smash it". All these proceedings were done with the microphone open so all could hear what he was doing. Eventually he had to be physically removed from the studio by another announcer. Listeners all over the island commented later that they had never heard anything like it.

73 for now and more about Morotai later, Joe VK2BJX.

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73 for now and more about Morotai later, Joe VK2BJX.
NEW MEMBERS
The Division would like to welcome the following new members.
January: J Corben VK2EXT, J Dumont VK2NH, P J Hampshire VK2ABT, A J Johnson VK2XEA, RT Loyd-Jones VK2YLE, L A Nickless VK2DR, L S Porter VK2HB, JF Ranford, S Wilkinson VK2PKB.

EVENTS FOR APRIL
These include the Annual General Meeting — 1400 hours on Saturday, 5th. Refer to separate posting for the details.
The Conference of Clubs Weekend will be hosted by the Orange ARC at Amateur Radio House, 192 Wigram Street, Parramatta, on the 19th-20th.
Details of these and other events will be broadcast on the VK2WI Sunday Broadcasts, 11am or 7.30pm.

BEACONS
On the evening of 17th January 1986, the VK2RSY 76cm beacon, on 432.420 MHz was heard in New Caledonia. As previously reported, it is intended to increase the VK2RSY network. The next frequencies to be introduced are the 10 and 24GHz bands. As we are unable to use them, one of the clubs, who have storage may be able to take them.

BROADCAST SURVEY
As these notes were being compiled, replies to the survey were still coming in to the Divisional Office. Thank you. A summary will appear in a later issue of these notes.

CALL BOOK
Now is the time for both clubs, groups and amateurs to upgrade any entries for the next edition of the Call Book. Please check your current entries and if amendments are required send them in to the Divisional Office. If it is a change to an amateur call sign listing, send your original notification to the Department of Communications, PO Box 970, North Sydney, NSW 2060, and a copy to the Division.

RO CONTEST
As noted elsewhere in this issue (in th Contest Column), a problem occurred which altered the placing first notified in the February issue of AR. The revised placing resulted in the VK2 Division being the winner for the second year running in recent times. Thank you to all who submitted their logs as well as those who advised the office during February, when the error occurred. The RD Trophy is on display at Amateur Radio House.

DIVISIONAL LIBRARY
Aub VK2AZT, reports that 1985 was another year of expansion in the library range, thanks to the many generous donations of books and magazines. There was one large donation of books which included many application data handbooks from the various solid state vendors. These were very much appreciated and should help those who

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AMATEUR RADIO
We stock all brands of amateur gear
— Kenwood
— Yaesu
— Standard
We also have a large range of second-hand gear
— Collins
— Heathcote
— Yaesu
— Kenwood
— Icom
Come and see our range of computer gear for the home-brewer

C B RADIO
All known brands stocked.
A large range of ANTENNAS and ACCESSORIES in stock
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General Electric
Pierce Simpson
Uniden
Philips
Icom
Sawtron
etc

SERVICE CONTRACTS TO THE TRADE AVAILABLE

TEST EQUIPMENT — LARGE RANGE OF HIGH QUALITY SECOND- HAND GEAR: HEWLETT PACKARD, TEKTRONIX, MARCONI, BOONTOON, B W D, BRUEL & KJAER, GENERAL RADIO, FLUKE, ATC, etc.

WE SERVICE WHAT WE SELL
PRESIDENT’S REPORT 1985

In presenting this Annual Report, I would like to thank all members of the WIA Queensland Division for their support in 1985, the 75th Anniversary Year of the Wireless Institute of Australia.

COUNCIL

Council members for 1985 were: John Aarss VK4QA, President, Ken Ayres VK4KD, State Co-ordinator, Dennis Brekleitzen VK4KEW, Member, Harold Bremnerman VK4HB, Special Services, Bill Dalgleish VK4UB, Outward QSL and Club Liaison Office, David Jerome VK4KM, Junior Vice-President and Minute Secretary, Theo Marks VK4MU, Honorary Secretary, Ross Mutzelburg VK4YI, Senior Vice-President and Alternate Federal Councilor, Paul Newman VK4NH, Honorary Treasurer, Bud Pounsett VK4QY, News and Information, Valerie Rickaby VK4VR, Service Liaison, Hugh Shaw VK4BHS, QSL Liaison Officer.

Early in 1985, Council awarded Life Membership of the Wireless Institute of Australia, Queensland to

Alan Shawsmith VK4AS, and his wife have done a tremendous amount of research into the history of amateur radio development in Queensland. Many articles in Amateur Radio during 1985 showed the results, with the November issue as the crowning glory, so much so, that many contributions will have to wait for inclusion in future editions of Amateur Radio. The commemorative booklet is nearing completion, a bit after the promised date, but so much more was a constant delay. It was necessary. 1986 should see the publication of OUR BOOK. For his work over the past years in the field of amateur radio journalism, Alan was awarded the 1985 VK4 Merit Badge, which was presented to him by both the Federal President, David Wardlaw VK3ADW, and the Divisional President, John Aarss VK4QA, in a ceremony at Alan’s QTH after the conclusion of the 1985 Radio Club Conference.

AWARDS AND CONTESTS

The Queensland Award still attracts many triers and a number were issued during 1985. A problem looms in the near future with many Shires clamouring to become, for reasons unknown, full-fledged Cities. When this comes about, the rules will have to be reviewed very closely.

Our very own Jack Files Sunshine Contest co-ordinator, and the number of inter-state competitors participating are a joy to heart of Joe Ackerman VK4AIX. To stay on top, more VK4 triers are needed. This, by the way, also applies to the Remembrance Day Contest.

WICEN

WICEN continued to assist wherever there was a need for their services. In southern Queensland, the hailstorm in January convinced some SES regional officers that extra assistance was needed under such circumstances. The Gold Coast and Redcliffe SES regions sought the assistance of local amateurs to become, as it were, mobile stations, to account, these units operate quite satisfactorily, with the one from Redcliffe being the first to have acted under actual emergency conditions. This idea is worthwhile for other regions to investigate, especially the smaller communities not covered by large radio clubs in central and northern Queensland.

WICEN officers kept their hands in portable operations in all areas by assisting various organisations as communication personnel.

Further comments on Membership are very similar to those made in my 1984 report — very similar indeed. Thanks are also due to Guy VK4ZZX and overseas joining the HF call-backs. If there are complaints about the News Service as far as news is concerned, you the member can take the blame. The Statistical Section, VK4AOK, and overseas joining the HF call-backs. If there are complaints about the News Service as far as news is concerned, you the member can take the blame. But if there are complaints about the News Service as far as news is concerned, you the member can take the blame. So much so, that many contributions will have to wait for inclusion in future editions of Amateur Radio. The commemorative booklet is nearing completion, a bit after the promised date, but so much more was a constant delay. It was necessary. 1986 should see the publication of OUR BOOK. For his work over the past years in the field of amateur radio journalism, Alan was awarded the 1985 VK4 Merit Badge, which was presented to him by both the Federal President, David Wardlaw VK3ADW, and the Divisional President, John Aarss VK4QA, in a ceremony at Alan’s QTH after the conclusion of the 1985 Radio Club Conference.

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onto the market. Surplus Sales is normally a money spinner for the Division. Also, booksales dropped markedly. There will need to be some serious work done during 1986 by Council to find ways and means to contain expenses and make any increase in membership fees as low as possible. One way in achieving this is, of course, more members.

But that depends to a great extent on present members and recruitment. Regardless of the figures presented, our Honorary Treasurer, Paul VK4APN, has done a very good job considering the present economic conditions.

1985 RADIO CLUB CONFERENCE
Club motions were not as abundant as in previous years, so more time was spent on the complete Federal Motions. The Conference was further honoured to have as its VIP guest, the Federal President of the WIA, the Honourable Willoughby Warden, QC, from Cape Willoughby Lighthouse and marine mobile from the ferry PHILANDERER was a great behind-the-scenes worker to assist amateur radio in North Queensland.

75th Anniversary Celebrations were held all over Queensland, each club doing their own local things. The work done by the Darling Downs ARC and Oakey are to be recommended as they brought about tremendous radio traffic with good publicity in the local papers.

The culmination of the national festivities was the dinner in Melbourne which was attended by many international and national celebrities. Guy, as Federal Councillor and his wife Anne, were among those at the Melbourne Dinner. By all accounts, it was an event not to be forgotten very lightly.

At State level, Council faced a mammoth task to select 20 Queensland amateurs worthy to be recipients of the commemorative WIA Anniversary Gold or Silver Medallion. A special committee was set up and its recommendation to Council, with minor modifications, accepted. The list of those named is published in the January 1986 issue of OTC.

In addition to those listed, Guy VK4ZXZ and I received the Commemorative Medallion from the Federal President of the WIA.

FEDERAL REPRESENTATION
On behalf of Council and members I would like to express my thanks to Guy VK4ZXZ, the VK4 Federal Councillor, and Ross VK4JY, the VK4 Alternate Federal Councillor, for their tremendous efforts to keep up-to-date and to report regularly to the membership and Council, all the news forthcoming from the Federal Office in Melbourne, and from other Divisions. Their work during the 1985 Federal Convention, in presenting our Division's viewpoints is greatly appreciated.

For his work, Guy was especially honoured to accompany the Federal Delegation to the IARU Region 3 Conference, in Auckland, New Zealand, the only non-Federal Official to be included. Congratulations, Guy.

THE FUTURE
It is very difficult to see into the crystal ball and predict what is going to happen in the future in these days of rapid developing technical advancement. No attempt will therefore be made to predict which, except say, amateur radio will face many exciting changes and challenges. And it is up to us all to be prepared to meet these changes and challenges... united in the Wireless Institute of Australia.

CONCLUSION
As I mentioned last year, due to certain circumstances beyond my control, I was again unable to visit many clubs, especially those in the regional areas. However, the North Queensland Convention provided me with a chance to meet with many members of clubs in the northern and central regions. Had I been in the circumstances as I am now, I believe the report I would have been able to see many more clubs, especially those in the western regions.

It is my intention to make 1986 my final year as a member of the Executive Medical Board.

It is very difficult to gaze into the crystal ball and predict what the future holds for 1986 and beyond. With the possible exception of one member, all those in the Executive Medical Board that had served in the past few years have stood down for the sake of rejuvenation.

However, the North Queensland Convention and the Wireless Institute of Australia will face many exciting changes and challenges, but with the help of the members we can face them with confidence... united in the Wireless Institute of Australia.

John Aarseth VK4QA
President, WIA VK4 Division.

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, S.A. 5039

As you are probably aware by now, or will be by the time you read the Silent Keys, we lost our old friend and respected past Divisional Historian, Jack Coulter VK5JK, on 26th January. What made Jack's death even more poignant was the fact that he was to have received one of the WIA 75th Medallions and he never knew. We had even arranged that Rowland VK50U was going to deliver it in person to Jack at Daws' Road Hospital on the day of the WIA meeting when the others were to have been presented, 28th January.

Since then, I have spoken to Dennis, Jack's eldest son, and after discussion with his brother Robert, who is in Sydney, they have decided that it would be a nice gesture for us to display the medallion in the Historian's Cabinet, in memory of Jack, which Council is very happy to do.

MARINE MOBILE
I hear that the activation of the VK5JSA call sign from Cape Willoughby Lighthouse and marine mobile from the ferry PHILANDERER was a great success and several of those involved are now getting writers' cramp from writing QSL cards and awards. I understand the elements were not very fast, to Bill VK5FVR/AE and VK5JSA, who operated marine mobile on the PHILANDERER for four days prior to the lighthouse activation. Not than an Ancient Mariner like Jack would admit to felling the slightest bit sea-sick, but I gather that they were very glad to be back on dry land again!

J150 PLACINGS
The activation of the VK5JSA call sign also boosts people's scores for the J150 Award by 15 points at a time. The first 12 Awards have already been issued, which has raised doubts and worry the fear that perhaps it might be rather difficult to achieve. There had to be a countdown to decide some placings as many were received on the same day.

The order is as follows:
1 VK5SJ
2 ZL1AQO (1st overseas) VK5LNP (1st novice)
3 VK5ABO
4 VK5XK
5 VK2AKP
6 VK3CQP
7 VK3XK (1st all CW)
8 VK2PLN (1st novice)
9 VK5KS (1st YL)
10 VK2PLN 16 VK3LJ
11 VK4AT
12 VK5AQZ

Congratulations to all the above, and it is nice to see that the three VK5s are all active on the nets or activities, they put in a great deal of time for the benefit of others who want to get the Award, not just for themselves.

DIARY DATES
11-13th April 13th Clubs' Convention (for those interested in participating).
22nd April AGM.
29th April Buy and Sell.

To be eligible for the Intruder Watch Award, you must contribute an Intruder Log. Send yours in now!!

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

NEW MEMBERS
The members and officials of the VK3 Division extends a warm welcome to the following new members.

New Abel, F Clark VK3FC, Judith Clarkson VK3GC, John Couche VK3H, John Couche VK3PHY, Maurice Cox, Raymond Curran VK3QDN, Ray Dean VK3PQO, F Huay YBMF, Michael Franck, Vincent Fournier VK3NQP, Roger Gardiner, Geoffrey Gough VK3XBD, Michael Gomerski, Richard Griffiths VK3XRG, Hamilton Henwood VK3NAH.

John Herrmann, R Jackson VK3CNJ, Edward John VK3BUJ, K Jones VK3XPH, Philip Lewithwaite VK3CQV, Terence Morrison VK3DZV, R Oldfield, Gregory Papworth VK3BYA92DY, Stephen Smith VK3XXS, Selimjanka JEGSA, Richard Valentine VK3FT, Art Van Etten VK3GEC, Robert Williams VK3VOS, R Magilton VK3DRC, W Massey VK3PSB and G Manders VK3CGM.

NEW POSTAL ADDRESS
As of the 1st April 1986, the VK3 WIA Broadcast postal address will be PO Box 440, Carlton South, Vic. 3053. Members contributing to the Broadcast are advised to use the above address and please remember it is Carlton South, as correspondence with just Carlton in the address may not be delivered.

JANUARY 1986

AMATEUR RADIO, April 1986 - Page 57
CONGRATULATIONS VK2

While we would have liked to have been the winners of the 1985 RD, Contest, we recognise that mistakes can happen and indeed we feel very sorry for Ian Hunt, who is undoubtedly most embarrassed. We hope such embarrassment stops with this letter.

Many things have been said, but the fact remains that we do not want to be seen as hollow winners upon some strict interpretation of the rules. nor do we want to see the results declared null and void so as to deprive the real victor of its trophy.

This division would like to support the spirit of the contest and therefore extends to the VK2 Division our heartfelt congratulations. We will meet you all next time around, and if we win, we will deserve it.

VK1 Divisional Committee.

CHALLENGE

I enjoyed reading the “challenge” in February issue! Editorial! I appreciate the fine material in each issue and trust Amateur Radio will continue to have good support from all of us out here.

Sincerely,

Don MacLean VK2DON,
Box 280,
Ingleburn, NSW. 2565.

MEMORIES

Roy Stephens VK4BRS, kindly loaned me a copy of the November 1985, issue of Amateur Radio, as it contained mention of my days as VK4YL.

And the whole article on pre-WWII days in VK4 very exciting as I recalled so many names and calls that were a part of our life then.

My father, VK4GK, was involved in many of the experiments with Arthur Walz VK4AW, Bill Harston VK4RY, Bill Wishart VK4WT and Nim Love VK4JL, and his Log Books read like a diary of those pioneering days.

Other amateurs mentioned in the issue who brought back many happy memories were Leo Feenaghty VK4EI, Matt O’Brien VK4MM, Bill McConochie VK4AY, Harold Shotz VK4HR and Reg Vickers VK4RV, to name a few.

and of course, VK4BRS — I recall his Sunday Morning Sessions. Then also, I read with avid interest about Eric Lake VK4EL and Roy Belstead VK4EI.

By the way, my father’s initials were AH MacKenzie. He endeavoured to get the call sign 4AM, the 4A, but was told that both were reserved for future broadcast stations, so he obtained 4GK, with the result that many thought his christian name started with G — but all called him “Mac”.

Congratulations to VK4SS on his article, and thanks for the happy memories this publication brought me.

Yours sincerely,

Madeline Pugh (nee MacKenzie) ex-VK4YL,
5 Conrad Court,
Nambour, Old. 4560.

REPEATERS — THE FUTURE

I wish to comment on the article which appeared in AR, February p8. Some ideas in the DOC paper quoted in that article are quoted in this article.

1 It suggests cross-linking to be within the same amateur band. If this had been law in the USA, the potential experiment would have been possible. From Sydney, I have operated through several 10 metre FM USA repeaters which, in turn, were linked to a two metre repeater where I spoke with mobile and home stations, which in turn were linked to 70cm and I was able to converse with an operator in his garden using a walkie-talkie. This linking repeater experiment, which is an everyday occurrence in US amateur radio, allowed a walkie-talkie operator to achieve a contact half-way round the world. This is not prohibited by law.

2 It suggests that 1300MHz be used for link frequencies. Many unused frequencies may exist on lower bands where licensees do not need to invest.

3 It suggests cross-linking of repeaters should not provide access to stations in capital cities. In my opinion, all of the above points are unnecessary restrictions. Point three goes so far as to remove one aspect of radio communication experimentation from amateurs who happen to live in a geographic location presumably because they do not co-incide with the Department’s idea of what repeaters are all about. What amateurs do on their bands should be an amateur matter and the Department should encourage all and any aspect of experimentation and not limit new innovations which the descendants of the original radio experimenters wish to attempt.

These severe restrictions only serve to create and encourage a purely radio telephone system. Comparisons between amateur and commercial repeaters should be terminated.

No reason is given for not allowing individuals to hold repeater licences. In the USA individuals can hold such licences, so whether it be an individual or a group, I don’t see why it matters. Whilst I agree with orderly development, this should not be used to hinder initiative and experimental motivation.

Use of repeater stations: Regulation 4.13 (a) Approval for a repeater depends on the requirements of a particular area and (b) Repeaters shall not be intended for long distance communications. I feel these guidelines should not exist for the amateur service because they intrude into the scope of experimentation which is possible with such systems.

I do not agree with the idea that same cross-band linking of a repeater should not be permitted where an amateur can originate a signal on a band he is normally permitted to use.

This virtually eradicates any ideas of linking proposed in Australia, such as, the LACD experiment which has long been part of US amateur radio and was recently introduced in Canada. Such a consideration is really unnecessary as limited licensees have long been appearing on HF via amateur satellites. Furthermore, uncensored newcomers can operate over HF under supervision, and would not cause any interference. This allows all to experiment, which will limit experimentation which is possible with such systems.

I wish to advise my fellow amateurs, QSL managers and DX columnists of this disappointing news.

Your fraternally,

Charles Bean VK2A0QY/ZS7MD,
21/180 Split Road,
Mosman, NSW. 2088.

PIRATING OF A CALL SIGN

In addition to my VK2 call sign, I still retain a South African call, ZS7MD, which I have held since 1949.

Sadly, I have just been advised that a yacht en route to Australia is using the ZS7MD call sign illegally.

I wish to advise my fellow amateurs, QSL managers and DX columnists of this disappointing news.

Your fraternally,

Lindsay VK3ANJ.

SLIGHTLY VOCAL?

It was felt that this cartoon may bring some smiles to the faces of those who have noted, from time-to-time, the articles/letters/comments contributed by Lindsay VK3ANJ.

"THINGS QUIET THIS MONTH?"

"YES — NOTHING FROM VK3ANJ!"

Lindsay has seen a copy of the cartoon and appreciates its sentiments!

R N Torrington,
4 Thistle Street,
South Pascoe Vale, Vic. 3044.
DISCUSSION PAPER VIEWS

It is no news to many of us that amateur radio is in dire straights. Our fine hobby has become less than it can and should be and consequently attracted fewer and fewer new people to its ranks.

For this reason, I was overjoyed to see a discussion paper entitled Amateur Radio — Future Direction produced and circulated by Jim Linton VK3PC and Roger Harrison VK2ZTB.

The paper was comprehensive in remarkable depth and with great breadth of vision.

Ponder in turn, they have proposed solutions which are not only appropriate, but based on good old fashioned common sense.

Amateur radio grew up at the start of this century, the decade which bequeathed to the world its curiosity in electronics and radio. As they pass by, they look into it with some (such as myself) abandoned amateur radio years ago.

The World Wars brought more advancement in the technology. Many improvements were made in components, techniques and knowledge.

After the Second World War, there were many rigs available and large stockpiles of other gear. Not up to the proper standard for amateur radio. This was the great period of experimentation for the radio amateurs of the world. Rigs were put together out of cheap surplus gear and then modified almost beyond recognition. New techniques were invented and others abandoned.

The 70s saw the advent of black box rigs and a steady decline in the experimental nature of amateur radio. There was little experimentation or innovation, and very little enthusiasm. Amateur radio again drifted away.

The years up to the 80s are gone, never to return. It is now time to prepare for the 80s. It is for this reason that I was overjoyed to see a discussion paper entitled Amateur Radio — Future Direction produced and circulated by Jim Linton VK3PC and Roger Harrison VK2ZTB.

We have been bitten by the hobby bug and Roger and I have examined these questions and more in their paper. They have included facts, figures, diagrams and logic which cannot be faulted. More than that, they have proposed solutions. Real solutions to real problems.

Please read it. Please help.

David First VK3YDE AR

DISCUSSION PAPER

In regard to the Discussion Paper, February AR, as the paper is directed mainly at the younger generation it may be timely to give a young point of view.

There has been little interest in amateur radio from the younger generation, and on top of that, a decline in the amateur fraternity.

From a 1984 WIA survey

<table>
<thead>
<tr>
<th>AGE</th>
<th>PERCENTAGE</th>
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<tr>
<td>Below 20</td>
<td>1</td>
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<td>21-40</td>
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<td>41-60</td>
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<td>61plus</td>
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<tr>
<td>Below 30</td>
<td>52</td>
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This survey of amateurs is completely contradictory to a population survey by the Australian Bureau of Statistics.

50 plus approx 25
Below 30 50

I have been an amateur for over 18 months and have come across few young amateurs. I know of three others my age, (15 years). I attempted starting an amateur radio club at school, but it quickly lapsed due to lack of interest. Their interests in amateur radio are large, but they are not capable of obtaining a licence, as some are not too bright scholastically.

I believe, by increasing the number of licences available the hobby's attractiveness will also be increased, particularly by the younger generation.

I look forward to talking to many new amateurs on the air and thoroughly support the proposals brought forward in the Discussion Paper.

Adrian Amato VK1NYA, 13 Fullilager Cres, Geelong, Vic. 3215

DISCUSSION PAPER

I am in favour of most of the proposals in the discussion paper, February AR. The introduction of more entry points into the hobby, particularly those catering for the computer generation, would play an important part in getting more people into the amateur bands.

All the suggestions in the paper to which I have any objection, is the suggested increase in power limits for AOCP and LACOP licence holders. This matter has been well-argued before, so I will not argue.

The extra licence classes would allow many people to expand their current interest in data communications into the amateur bands. I, personally would wish to see facilities available for the many years, and read many books of varying types. Amateur radio had not been brought to my attention.

I would gladly offer my assistance to any project that will try to achieve bringing amateur radio to the general populace and to remember the money saving aspect of the younger generation.

Now that I am on-air, I would gladly welcome to meet with others with similar ideas. (I did finally get on-air much to the detriment of my bank balance, which now needs a few figures — two being to the right of the decimal point).

Chers and 73.
Conrad Canterford VK3PHW, 26 Pyre Street, Tatura, Vic. 3616

DISCUSSION PAPER

I have studied the Discussion Paper by Messrs Linton and Harrison, and whilst finding it thought provoking, I was not altogether in agreement with some of the suggestions advanced to be detrimental to the Amateur Radio Service in the long term.

One cannot deny the advance of technology, and I would have a license, and all the things you can do with the various licences. To cover all of this, I think considerably more is required than an advertisement in a few electronic magazines. The target audience must cover more than just people with an interest in electronics and radio. Perhaps the suggestions advanced were to be produced with a set of additional materials, such as pamphlets containing the information, as set out above for media stories.

If the proposed licence grades are introduced, it would also be a good idea to produce articles for the magazines and computer and electronics magazines to show what can be done on amateur radio, with an emphasis on the computing side. I shall put one such article in a small publication of a local club (Geelong) in the near future. I will ask for comments from the readers and try to determine what the target audience must cover more than just people interested in electronics and radio. If the proposed licence grades are introduced, it would also be a good idea to produce articles for the many computer and electronics magazines to show what can be done on amateur radio, with an emphasis on the computing side. I shall put one such article in a small publication of a local club (Geelong) in the near future. I will ask for comments from the readers and try to determine what the target audience must cover more than just people interested in electronics and radio.

Due to the difficulty in determining who is going to be interested in these new licence grades, we need to let people know that we have something new and exciting, and we need to let people know that we have something new and exciting, and we need to let people know that we have something new and exciting.

Many of the above suggestions are based on my experience with amateur radio, and what I found, and still find, lacking in the general literature. (February AR).

Perhaps, while discussing demonstration stations, this same advance in technology would appear to merit raising the standard of technical quality.

Conrad Canterford VK3PHW, 26 Pyre Street, Tatura, Vic. 3616
The Discussion Paper refers to the downturn in amateur radio, and seeks to ensure its long term survival. It claims a level of involvement of young people, and supports this with percentage figures. But, it makes no mention of corresponding figures for these groups in preceding decades of the hobby.

Messrs Linton and Harrison advocate a Telephony License for beginners, at a lower technical standard, with VHF/UHF privileges. This seems a retrograde step, as persons who cannot, or do not wish to qualify for amateur status at the current technical level (which is not particularly high), can use both HF and UHF bands allocated to the Citizens Band Service.

We must acknowledge the advances being made in digital technology, and the fact that in some areas they are closely allied to techniques of radio transmission; but the hobby needs to be made meaningful for a whole new untapped generation of computer hobbyists and the emerging computer technology. The interest of amateur radio for the fullest possible benefit of the hobby would appear to be unqualified.

Certainly there are many computer hobbyists who would be a great asset to amateur radio, and who could contribute much, both new technology, and stimulus to our hobby; however there are many so called computer hobbyists who by their very lack of technical qualifications and immaturity could prove to be of great nuisance-value if allowed on the amateur bands.

I urge all my fellow amateurs to seriously consider the Discussion Paper by Messrs Linton and Harrison, and whilst we should agree to embrace new technology and advances, and make our hobby attractive to the new generation of prospective amateurs, we must exercise caution and prudence.

We must not allow our technical standard to be lowered — if anything it should be raised! We should not indiscriminately advocate any mode of transmission, which in the long term, could prove to be detrimental to the goodwill and friendship built by many amateurs throughout the world in years gone by.

This goodwill and friendship can be maintained by tolerance, acceptance of advancing technology, and unfortunately, by some degree of firm regulation, and maintenance of a high technical standard in the hobby.

Co-author of the Discussion Paper, Jim Linton, indicated that the thoughts and recommendations contained therein were his and Roger Harrison's private views, and not necessarily those of the VK3 Division Council, even though at this time he is the current President of the Division. Similarly, the opinions expressed in this letter are my own, and in no way reflect the collective views of the VK3 Division Council, which I am a member.

In fact, at the time of writing, the Discussion Paper has not yet been tabled or considered by Council.

Barry Wilton VK3XV, Box 22, Balclutha, Vic. 3183.

THE MEXICAN EARTHQUAKE
FROM THE OTHER SIDE

The 19th September 1985, began like any other day, but at 7.19am Mexicans were reminded just how insecure and uncertain life can be. Mexico was shaken by an 8.1 earthquake, and another, measured at 7.5 on the Richter scale, was felt the next day. Reports in Mexico indicated that 8,000 died, 30,000 were injured and 100,000 were left homeless.

Maria XE1CVY, had not used her amateur radio equipment for over a year due to license renewal problems, but during the crisis of the earthquake she was given permission to run health and welfare traffic. Dozens of amateur operators responded to her calls and assisted in passing hundreds of messages to anxious families and friends in many parts of the world.

Maria operated for 12-14 hours a day for over a month, only stopping long enough to catch a bite to eat. Maria was ably supported by her husband Mack, and her neighbours. From material supplied by Maria Jones XE1CVY and contributed by Mack Jones XE1CVY, Maria and her husband Mack teach at the Baptist Theological Seminary of Mexico and Maria has also had the call signs KASCYV and C5XSEJ. Maria, originally from Mississippi, is multi-lingual and was a participant in a regional Music Conference in Costa Rica in January 1989, where she presented a paper and took voice and singing classes for six hours.

Should the offending transmission be in a digital mode, the operator will not even hear my request. A modification of the current novice license, still maintaining the technical and code standard, to allow digital transmission modes would appear to have merit, but only if those modes were confined to a specified portion of the band. This allocation should be stipulated by DOC and not by a so-called Gentlemen's Agreement.

Amateur radio has many aspects of endeavour which appeal to widely differing groups who use the spectrum. No group should be denied part of that spectrum, simply because they choose to use a different mode of transmission (provided they cause no interference with others).

The transmission of digital encoded data can produce several significant problems of which most amateurs are aware. The hobby is, to a large degree, self-regulating and operators using telephony and CW, have over the years, managed to exist fairly well together — because they can converse with one another despite the different modes of transmission.

I admit I am slightly biased in outlook regarding the use of the amateur bands, and as an HF DX operator I am primarily concerned with some of the problems which can arise from unrestricted use of data transmission on HF.

For example — if I am enjoying a contact with a fellow amateur and another station commences transmission on phone or CW close to my operating frequency, I can politely ask him to QSY, and if he is a true amateur in spirit he will apologise for the interference and seek another frequency.

So, what do you think? Please send your comments to the VK3 Division Council.

The Discussion Paper refers to the downturn in amateur radio, and seeks to ensure its long term survival. It claims a level of involvement of young people, and supports this with percentage figures. But, it makes no mention of corresponding figures for these groups in preceding decades of the hobby.

Messrs Linton and Harrison advocate a Telephony License for beginners, at a lower technical standard, with VHF/UHF privileges. This seems a retrograde step, as persons who cannot, or do not wish to qualify for amateur status at the current technical level (which is not particularly high), can use both HF and UHF bands allocated to the Citizens Band Service.

We must acknowledge the advances being made in digital technology, and the fact that in some areas they are closely allied to techniques of radio transmission; but the hobby needs to be made meaningful for a whole new untapped generation of computer hobbyists and the emerging computer technology. The interest of amateur radio for the fullest possible benefit of the hobby would appear to be unqualified.

Certainly there are many computer hobbyists who would be a great asset to amateur radio, and who could contribute much, both new technology, and stimulus to our hobby; however there are many so called computer hobbyists who by their very lack of technical qualifications and immaturity could prove to be of great nuisance-value if allowed on the amateur bands.

I urge all my fellow amateurs to seriously consider the Discussion Paper by Messrs Linton and Harrison, and whilst we should agree to embrace new technology and advances, and make our hobby attractive to the new generation of prospective amateurs, we must exercise caution and prudence.

We must not allow our technical standard to be lowered — if anything it should be raised! We should not indiscriminately advocate any mode of transmission, which in the long term, could prove to be detrimental to the goodwill and friendship built by many amateurs throughout the world in years gone by.

This goodwill and friendship can be maintained by tolerance, acceptance of advancing technology, and unfortunately, by some degree of firm regulation, and maintenance of a high technical standard in the hobby.

Co-author of the Discussion Paper, Jim Linton, indicated that the thoughts and recommendations contained therein were his and Roger Harrison's private views, and not necessarily those of the VK3 Division Council, even though at this time he is the current President of the Division. Similarly, the opinions expressed in this letter are my own, and in no way reflect the collective views of the VK3 Division Council, which I am a member.

In fact, at the time of writing, the Discussion Paper has not yet been tabled or considered by Council.

Barry Wilton VK3XV, Box 22, Balclutha, Vic. 3183.

THE MEXICAN EARTHQUAKE
FROM THE OTHER SIDE

The 19th September 1985, began like any other day, but at 7.19am Mexicans were reminded just how insecure and uncertain life can be. Mexico was shaken by an 8.1 earthquake, and another, measured at 7.5 on the Richter scale, was felt the next day. Reports in Mexico indicated that 8,000 died, 30,000 were injured and 100,000 were left homeless.

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So, what do you think? Please send your comments to the VK3 Division Council.
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Dick Smith Electronics

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AMATEUR RADIO, April 1986 - Page 61
MR R J WOOD VK4YZ
MR J R DUNNE VK3AXQ
Jack over the years and he will be missed by the WIA and radio circles, who were helped by many years of giving his full weight to this position, from the WIA for his long service to the Australian coastal waters.

Bill Nelson VK2KH, passed away on 14th January 1986, after a long illness. He was first licensed in 1935, and was a member of the Aeradio station, VZDN, being constructed in 1936.

After the war, Jack married in 1942, and his wife Jean contributed to an increase in the 10cm flux value.

Solar activity was low throughout the month. Two sunspots were observed, the AR 1985. General Review of new Components, ICs, Test and Measuring Equipment, Cables, etc.

Col was a devoted family man. After an associate with a region of high activity on the surface of the sun, the disturbances culminated with a large flare on 6th February, which caused disruptions to HF transmissions throughout the world.

The flares are unusual as the have occurred close to the quietest period in the 11-year solar activity cycle.

The geomagnetic field reached storm levels on the three occasions during the month, but only one was a recurrent (Coronal Hole) type, the other two being the results of filaments erupting from the surface of the sun. There were four days on which the A index exceeded 25 and six days over 15.

Solar activity was low throughout the month. Two regions on the visible polar disc during the month contributed to an increase in the 10cm flux value during the middle of the month, however there was no significant flare activity.

10,7cm FLUX

1, 2/12 = 70; 3/12 = 71; 4/12 = 70; 5/12 = 72; 6/12 = 73; 7/12 = 74; 8/12 = 75; 9/12 = 76; 10/12 = 78; 11/12 = 79; 12/12 = 80; 13/12 = 78; 14/12 = 79; 15/12 = 80; 16/12 = 81; 17/12 = 82; 18/12 = 83; 19/12 = 82; 20/12 = 81; 21/12 = 82; 22/12 = 83; 23/12 = 83; 24/12 = 84; 25/12 = 72; 26/12 = 70; 27/12 = 68; 28/12 = 69; 29/12 = 68; 30/12 = 65. Average: 75.0.

SUNSPOT NUMBER 12/85 = 17.2. YEARLY AVERAGE E/85 = 17.5.

GEOMAGNETIC ACTIVITY

10/12 The geomagnetic field was at active levels between 0700-1520UTC. A = 17.
3/12 The field was active with a brief period around 1100UTC at minor storm level. A = 28.
18, 19/12 A sudden commencement was observed at 0647UTC on 18th. This was followed by minor storm conditions between 0800 and 1000UTC. The field was again disturbed on 19th, particularly between 0500-1300UTC. There was a large positive bay around 1330UTC and a smaller one at 1850UTC. A = 13, 33.
27-31/12 The field became active about 2100UTC on 27th and reached storm level between 0200 and 1400UTC on 28th. After quietening on 29th, the field again reached storm levels on 30th, declining to unsettled conditions after 1600UTC on 31st. A = 11, 35, 7, 35, 24.

The geomagnetic field reached storm levels on three occasions during the month, but only one was a recurrent (Coronal Hole) type, the other two being the results of filaments erupting from the surface of the sun. There were four days on which the A index exceeded 25 and six days over 15.
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a look at the Soviet Woodpecker

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(" Please make cheques or Money Orders payable to ‘Australian Electronics Monthly’")
The main photograph depicts the typical rugged terrain of Pitcairn Island, a choice DX location. (See page 36). Insert: A neat CW keyer, see page 16 for constructional details.

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### Special Features

Florence McKenzie is a name which appears regularly in the ALARA column of this magazine, particularly around ALARA contest time. In the column this month, a NSW OM has taken time to write of his memories, as a young lad, of this pioneering lady. See page 46.

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**News from France**

The Reseau des Emetteurs Francais, via F8BO, advises the following change of address for the French OSL Bureau.

Cards should be sent to REF OSL, BP 273, F74800, Montoire, Cedex.

Call signs in France are TK; FG; FH; FM; FO; FF; FR; FY and FT. Radio clubs are issued with FF prefixes.

Numerals are designated in licence class — 1 for Class A; 2 for Class B; 3 for Class C; 4 for Class D and 5 for Class E.

Class A licensees may use 144MHz phone and 20 watts. B may use 28.400-29.000MHz and 144MHz phone with 20 watts and 20 watts CW on 7.020-7.040, 14.050-14.100, 21.050-21.150, 28.000-28.100 and 144.050-144.090 MHz.

Class B may use 144MHz and 100 watts whilst Class D may use 100 watts CW on all bands, all modes. Class E can use 250 watts, all bands, all modes.

**Amateur Radio** May 1986 - Page 1
ICOM

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For Reliability & Performance
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THETA 5000E IS THE NEW STATE-OF-THE-
ART MICRO-COMPUTER CONTROLLED COM-
MUNICATION MACHINE. WRITE FOR SPECS.

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The name of Doctor V McDowall 4CM, constantly appears in the records of early wireless pioneers in the Sunshine State, firstly around 1907 and continuing through to WWII. In spite of this, much of his work and many of his achievements do not seem to have been officially recorded — or, if they were, the process of time has washed them into oblivion.

Doctor V McDowall was a humane man, highly creative and generous to the point of philanthropy. His somewhat retiring nature and professional ethics kept him from seeking the limelight. Another person of similar talents, with entrepreneurial instincts, would have unquestionably been prominent among his peers — instead, Doctor Val preferred to pursue his experiments without any desire for kudos.

He came from one of VK4’s outstanding families, his father Mr A McDowall was the Surveyor General of Queensland during the 1860s. After taking his MD in the early 1900s, Val first turned his attention to the X-ray spectrum. He successively conducted many DX radio experiments. The possibility of setting up a television station. His somewhat retiring nature and professional ethics kept him from seeking the limelight. An- other person of similar talents, with entrepreneural ethics kept him from seeking the limelight.

After WWII, he moved from the country-town of Laidley to Brisbane and set-up a practice at Parkbury House, Queen Street, City. Here he met a young man still in his 20s) and was one of the first of his profession to use radium therapy in VK4.

During 1927, Tom Elliott moved Broadcast Station 4CM from Preston House to the Windmill or Observatory Tower on Wickham Terrace, which Val had leased. (It is of passing interest to note here that the man who assisted Tom in making this change of QTH was Harry Angel VK4HA. At 95-years of age, Harry is still working DX on SSB this change of QTH was Harry Angel VK4HA. At 95-years of age, Harry is still working DX on SSB while Kenneth (Ken) Pincott VK3AFJ (1966-71) and Bill Roper VK3ARZ (1972-77) each contributed five years of their lives to the cause. Others only lasted for one or two years. But one of the latter was Ron Higginbotham VK3RN (Edi- tor 1958-60), and his two years as Editor do not even suggest how great was his contribution to the magazine. In fact, from 1949 to 1973, Ron was effectively the producer, typesetter and printer of Amateur Radio, even though he retired from the Publication Committee in 1964.

Until that time there had been an Editor’s Award for the best technical article each year, but with Ron’s resignation it was decided to rename it the Higginbotham Award. In 1965, its scope was broadened to include meritorious service towards ama- teur radio and the first recipient was the late (and long lamented) Warwick W (Pansy) Parsons VK5PS. So that is the origin of one of our awards, of which mention was made last month. Over the next few months we hope similarly to dig out the stories of the Technical and Alan Shawsmith Journalistic A wards. The Ron Wilkinson Achievement Award was covered in a separate article last month.

Another interesting fact to emerge was that rarely before 1983, the Editor of AR actually write an Editorial! This is not to detract from their contribution to the work of bringing you a magazine each month. In fact, there were numerous periods between 1973 and 1982 when the Editor and others were deeply involved with the nitty-gritty of production, now handled with great competence by Betken Productions. For many years the Main QSP effectively the Editorial, was provided by a somewhat faceless Federal Executive. But in 1983, Gil Sones VK3AJU, began the custom of a real monthly Editorial, written and signed by the Editor; and your present Editor, much to his joy has now completed another!

Bill Rice VK3ABP
Editor
Although a rare bird, there are very few active amateurs world-wide who have not heard of it . . .

Even though this is a very rare bird (there are believed to be only three or four extant), there is hardly an amateur alive world-wide who has not heard its call. There are reports of sightings, but these have usually been second-hand, and hard to verify. To the writers knowledge, the photographs of the Russian Woodpecker presented here are the first to be published outside of the Soviet Union. I took them at the Russians' invitation, while attending a symposium in Dushanbe, Tajicistan, as a guest of the Soviet Academy of Sciences.

The GORISONT or Horizon Radar located at the Astrophysical Observatory of the Lenin Tajic State University in Dushanbe, Tajicistan (38 degrees north, 69 degrees east) is a research tool used primarily to further knowledge of ionospheric propagation; it obviously has potential for use as an Over The Horizon Radar (OTHR). It is used routinely to observe backscatter at ranges from 2 000 to 4 000 kilometres and beyond.

The most spectacular portions of this system are the transmitting and receiving antennas (see photographs). They are identical, and are spaced several hundred metres apart. On the side of the reflecting screen, which is 75 metres long and 20 metres high, are 16 four element Yagis (driven element plus three directors) on 20 MHz. These are mounted in two bays, eight-over-eight, each bay separately fed, so that they can be phased to vary the beam elevation angle. On the back of the reflector screen is an array of broadband dipoles, covering from 15 to 30 MHz. Each array is mounted on a circular track, and can be rotated continuously in azimuth.

The Yagi antenna system gain at 20 MHz is in excess of 20dB, and, when driven by a 100kW pulse transmitter produces a signal with an obvious potential for world-wide reception. The broadband dipole array has appreciable gain from 14 to 30 MHz. Echo range versus azimuth is displayed on the plan position indicator CRT which is visible at the bottom left of Figure 2, as is the A scan at the upper left, and the recording camera display (centre).

OTHER SYSTEMS

Of course, the Soviet Union is not alone in its interest in, and use of OTHR. An excellent article by O G Villard on experiments in the US was published in QST in April 1980, and one on the HF radar installation near Alice Springs in Australia by Ian Hunt in Amateur Radio for April 1985. These radars do not produce interference in the same manner as the Soviet systems, since they use, among other techniques, spread spectrum to minimise radiation on any given frequency.

In addition to using the Horizon Radar, propagation experiments at the Astrophysical Observatory in Dushanbe are carried out with a conventional ionosonde (Figures 3 and 4), which also has a magnificent antenna system, this time fixed (Figure 5), but which can be phased for oblique sounding. An array of 12 11 element Yagis, steerable in both azimuth and elevation (Figure 6), is used for satellite tracking. Signals from Soviet launched satellites have been used in determining the polar diagrams of the various antenna systems used in their propagation and other experiments.

The above notwithstanding, the Astrophysical Observatory's reputation lies not in the field of radio propagation, but in the observation of comets and meteors. A large array of telescopic cameras is set up to photograph all of the night sky above an elevation angle of some 20 degrees. These cameras are operated continuously on clear nights, routinely recording meteor trails, and known and possibly new comets and asteroids. Spectrophotometers also record the spectra of the brighter meteors, giving clues as to their chemical composition.

Of more interest to radio amateurs, and VHFers in particular, are the radio meteor
Figure 1 — The back of the transmitting antenna, showing the broadband dipoles.

In addition to scientists from the Soviet Union, representatives of nine other nations were present, including eight from the USA who received travel support from the Atmospheric Research Section of the National Science Foundation. The Symposium was an unqualified success, based in no small measure on the fact that the international community of scientists is imbued with the same spirit of co-operation found in the international amateur radio community; what a pity more of the world’s politicians are not scientists and amateur radio enthusiasts!

Figure 2 — The receiver/display console, with a conventional A scan CRT at the upper left, plan position indicator (azimuth and range) below, and the recording camera in the centre.

In addition to determining meteor orbits from a three station recording system, winds in the height range from 80 to 100 kilometres are determined by tracking the ionised trail created by the meteor, as the trail is blown along by the wind. Two antenna arrays at right angles, pointed at an elevation angle of 45 degrees (Figure 7) are used to determine the north-south and east-west wind components as deduced from the line-of-sight drifts of the meteor trails.

While computers are used in data analysis, most of the equipment at the Astrophysical Observatory utilises the technology of the late-50s. This does not detract at all from the successful operation of their systems — it just makes it more labour intensive, and there is no lack of qualified labour available. The fact that they use tubes is no problem, in that the USSR still produces plenty of them; tubes might even be an advantage, since they are not susceptible to EMP!

Figure 4 — The ionosonde recording rack.
NEW SATELLITE SERVICE
The Overseas Telecommunications Commission (OTC) is to introduce a new satellite communications service to link computers internationally.
Known as Satnet III it enables subscribers to retrieve data from host computers around the world. The small dish system will use the Intelsat V satellite and is particularly suited to organisations that wish to link geographically dispersed locations.
Users are expected to include businesses involved in retail; travel; insurance; finance; banking; mining and off-shore exploration.
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KENPRO ROTATORS IN STOCK. KR-400RC $289; KR-600RC $389;
KR-500 (elevation) $289. Core cable $1/m. Top & bottom
clamps included.

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• HF 100W, 100% Duty Cycle Transceiver
• 100kHz-30MHz General Coverage Receive with excellent
spec
• 160-10m transmit, AM/FM/SB/CW modes all included
• 12ch memory w/mode scan, mem scan and program scan,
PBT, notch, NB, AM filter
• IC-3200A $749, Bonus
• AF-150 Auto-Tuner $959

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• HL-35V, 3-30W, GaAsFET .... $169
• HL-66V, 10-60W, 6m, GaAsFET .... $399
• HL-35V, 3-30W, GaAsFET .... $169
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• HC-200 w/3 pos ant switch .... $239
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• HC-2000 w/4pos sw, 2 kW .... $299
• HC-2000 w/4pos sw, 2 kW .... $299

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• HL-1K uses a pair of premium quality 4x1SOAs for 1 kW 1/p,
550W o/p. Full 550W carrier c/p for one minute, try that
with another 1 kW 1/p linears!
500W plate dissipation (not 300W). 160-10m + WARC .... $1295
• HL-2K (picture above) uses a pair of 3-500ZS for 2 kW 1/p,
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RF power o/p, Ig, Ip, Ep. 30% greater volume plate
transformer for heavier duty
operation .... $2195
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Above linears complete with tubes.

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KURANISHI FC-965UP-Converter, 0.5-60 MHz to 60.5-120
MHz $179
• AOR AR-2002, 25-550 + 800-1300 MHz, AM/FM/W, AC inc $729

FT-209R, 5W 2m h/h, w/FNB.4, chgr, c/case, whip $449
• FT-209R, 3.5W 2m h/h, w/FNB.4, chgr, c/case, whip $449
• FC-757AT Auto-Tuner 160-10m w/tuning memory $439
• FC-700, Mobile-Tuner, 160-15W meter, 150W dummy load $229
• FT-757GX, HE 100W tcvr, BONUS 3el 1 Om Yagi or V27 + helical
inc approved AC supply and MMB 28 Mobile Mounting Bracket.
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550W o/p. Full 550W carrier c/p for one minute, try that
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AMATEUR RADIO, May 1986 - Page 7
This program is intended as a basic primer for antenna and feedline design, and to act as a handy ready-reference source on antenna and related information.

As can be seen from the menu (lines 220-370), the program covers the more common amateur antennas and, in the case of options A, B, D, E, G, H and I, the program will provide optimum dimensions, feed-point impedance, gain etc for the nominated frequency. Options C and F give further details for the design of Yagis and dipoles respectively. Option J gives dimensions and required capacity for a Gamma Match at the nominated frequency. Option K allows for the calculation of the impedance of unmarked and unknown coaxial cable (such as that found in the corner of your shack). Option L allows for the design, or checking, of open wire feeders to provide particular impedances. Option M gives coaxial cable data for some of the more common types used by amateurs. Option N is a Standard Wire Gauge table and finally, Option O is for frequency to wavelength, and vice-versa, conversion.

All the above material is fairly standard and can be found in a variety of amateur antenna books thus, the program merely acts as an easy way of providing initial designs, dimensions, etc. In addition, if the formulae used in the program are not a particular individuals preferred ones, they can be simply changed.

The program is written for the Amstrad CPC464, which uses Locomotive Basic (a variety of Microsoft Basic), it should therefore be easily converted to run on a range of the more popular home computers. If the thought of typing in the program (it is 19k long) is a bit daunting, I will be happy to make copies of it for any WIA members provided I am supplied with a blank tape or disc, a self-addressed suitable package to return it in and, of course, either pre-stamped or with sufficient funds to cover the postage costs.
3590 LOCATE 1,11:PRINT"F/D r a t i o - 25dB"
360P) LOCATE 1 ,14:PRINT"Gain = U.SdB"
3610 LOCATE 1,17:PRINT"A11 cl» roctors" : LOCATE 1,IB:PRINT"are 2. 37.": LOCATE 1,19: PR
INT"shorterLOCATF I ,20; PRINT "than the" : LOCATE 1,21
:PRINT"driven e l . "
3620 PEN 1
"6 "PI SOUND ! , 7S, 10,10
3640 LOCATE 14,25:INPUT "Maro Y/N";a*
3650 a*-UPPER*«««)
3660 IP «t-"N" THEN 190
7-670 IF a*="Y" THEN 3330
3690 REM
3690 REM
370B REM • GAMMA MATCH DESIGN «
3710 REM
J720 REM
3730 CLS:PEN I
3740 PRINT TAB<10)"GAMMA MATCH DESIGN"
3750 PEN 2
3760 SOUND 1,75,10,10
3770 LOCATE S,0:PRINT"What. IS the operjtinq fr equency":LUCATE 15,10: INPUT "in ME
2";F
37H« CLS:PEN 1
37941 C=INT <300/r«6.2>:A=ROUND< <300/r«39.9> *0. 055,2) : B-FrtXINI) < < 300/F»39. 9) «0. 008-j ,
2)
>B00 FOR >: -20 TO 3B: LOT" AT E x,10:PR!NT CHR* <210) : NEXT
3B10 FOR i - l l TfJ I 4: PRINT TAB<36) CHR« 11 49 >: NEXT
"020 LOCATE 36,14:PRINT CHR*(153)
3040 FOR x=22 10 24:L0CATE x,14:PRtNT CHR*<154):NEXT:LOCATE 23,14:P«INT CHR*<15?
) : LOCATF 26, 14j PR INT CHR* <131)! FOR x-27 TO 35:L0t:ATE
x,14:PRINT C>tfV*<154): NE X I
SH60 LOCATF. 37,ll:PRlNT CHR* < H CHR* < 11) : LOCATE 77 , 12: PRINT"B" : LOCATE 37, I 4s PRINT
C>*.*< 1 )CHR* •• 10>
3070 LOCATF 22,16:PRINT"Variah1e~:LOCATE 22,i7:PRINT"Capacitor":LOCATE 26,18:PRI

4710 IF a*-"N" THEN 190
4720 REM
4730 REM
4740 REM » COAX CABLE DATA •
4750 REM •»«•••••»•«••••»»»»
4760 REM
4770 CLS:PEN 1:MODE 2
4700 PRINT TAB(30>"COAXIAL CABLE DATA"
Attenuation TdB/100 f t . ) at frequencies <MC7
4790 LOCATE 1 ,4-.PRINT"CABLE
s) Capacity
Max ~
4800 LOCATE 1,5:PRINT"
400
10
50
100
200
1
J1
000 pF/ft
V.r»s"
4. 1
2.,7
4910 LOCATE I ,7:PRINT"RG-BA/U 50. 0 0. 16 0.,55
1. 3
1. 9
40009.0
30.5
4920
PRINT"RG-11A/U 75. 0 0. IB 0..66
4.8
1. 6
2., 3
3..3
7.H
20.3
4930
PRINT"RG-33A/U 30. 0 0..30
3., 2
4. 9
7.,0
10.0
1
1.. 2
6.S
29.5
1900"
4940
PRINT"RG-59U 53. 5 0.. 33 1.. 25 3. 15 4. 6
6.,9
10.5
1
19007.5
29.5
4.,9
7. 4 12.0 2
4850
PRINT"RG-5BC/U 50. 0 0. 42
1., 4
3.,3
PRINT"RG-39A/U 73. 0
2300"
PRlNf"Rl3-122 30. 0
29.3
190O"
PRINT"RG-174
SO.0
150030.0
PR1NT"RG-179B 50. 0
29.5
1000*
F'R INT" RG-213/U 50. 0
500029.5
PRINT"RG-214
50. 0
300029.5
PRINT"RG-21B/U 30..»
4.4
29.3 11000"
PRINT"RG-223
50..0
4930
190029.3
6.3
4940 SOUND 1,75,10,10
4950 LOCATE 20,2SiPRINT"Preas any key
496© IF INKEY*-"" THEN 4960
4970 GOTO 190
4980 REM

4860
2.0
48 70
9.0
4990
0.0
4990
6-O
4900
8.0
4910
B.8
4920

20.3

0..34

1., 1

2. 4

z. .

4

4..9

7.0

1

0.. 4

1., 7

4..5

7,.0

11 ,0
.

16.5

2

2., 3

3.,9

6. 6

9,.9

12..0

17.5

3

2.,6

5. 6

10. 5

14,.0

19,.0

28.0

4

0.. 15

0. S5

1..9

2..7

4. 1

0.,21

0.,66

1. 5

2,.3

3..3

5.0

0..06

0..24

0. 62

0,.95

1,.5

2.4

0. .3

1., 2

3. 2

4,.8

7,.0

10.0

1.

3

1

7BB0 LOCATE 22,12:PRINT CHR* < 1 >C»«R* <8) :LOCATE 23, 12:PRINT"
A
":LOCATE 2
to return to Main Menu"
5,12:E-RINT CHRt(l>CHKf (9>
SB90 PEN I
J900 LOCATE 10,1:PRINT"GAMMA MATCH DESIGN"
3910 LOCATE iu^2:PRINT"i»»i»»««»»»*»»«»»**«"
4 9 9 0 REM
3920 F'
EN 2 1.0:F'RINT"A - " A " t n*». ": LOCATE I,10:PRINT"B = " B "ins. ": LOCATE 1,1
3930
LOCATE
3000 REM • STANDARD WIRE GAUGE «
5010 REM ••--••••••"••••••••••••••null
2: PR INT "13 (max > - " C "pF"
7940 PEN 1:SOUND I,75,I0.10
3020 REM
7950 LOCATE 12,25: INPUT -More Y/N":a*
3030 CLS:PEN 1
;.960 a I "UPPER* I >
3040 PRINT TAB<10)"STANDARD WIRE GAUGE"
3970 IF a*-"Y" THEN 3730
ins."
3030
s , ,4:PRINT"S.W.G.
Ins.
S.W.G.
7900 IT a*-"N" THEN 190
5060
0.0124
0.0720"
6,,6:PRINT"30
15
3990 REM
5070
14
0.08006,,7:PRINT"29
0.0136
4000 REM
««*•!>••
0.0920"
0.0148
13
6,,8:PR1NT"28
4010 REM • COAX CABLE IMPEDANCE •
12
0.1040"
0.0164
6,,9:PRINT"27
4020 F<FM •
0.1160"
0..0180
1I
6,,10 :PRINT"26
40:0 REM
0.
.0200
10
0.12B05110
6,> 1:PRINT"23
I
4040 CLS: F'EN I
9
0.1440"
0.. 0220
3120 LOCATE 6,. 12:PRINT"24
4050 PRINT TAB< 10) "COAXIAL CAE«LE 1 MF'EDANCE"
a .0240
0.1600"
B
3130 LOCATE 6,.13 :PRINT"23
4B60 SOUND 1,75,10,10
0.. 02B0
7
0.1760"
5140 LOCATE 6,. 14: F'R I NT "22
4070 LOCATE 9,0: PR1N ("Jniitlc Diameter T D> of "
0.1920"
5150 LOCATE 6,>15:PRINT"21
0 .0320
6
4080 lUCAIE 16,9sINPUT"Outer Conductor";D
3
5160 LOCATE 6,.16 : PR 1 NT " 20
0.2120"
0,.0360
4090 SOUND 1,75,10,10
5170 LOCATE 6,.17 :PRINT"|9
4
o.. 0400
0.2320"
4100 LOCATE 9,12:PRI
NT "Outside Diameter td> of "
5180• LOCATE 6,.18 :PRINT"18
0..0480
3
0.2520"
7
4110 LOCATE 1 ,I 3:1NPUI "Inner Conductor "; e
3190I LOCATE 6,.19 :PRINT"17
0..0560
2
0.2760"
4 120 SOUND :,75.10.10
32001 LOCATE6..20 :PRINT"16
0.7000"
0.. 0640
1
5210
4170 LOCATE 9,I6:PRINT "CiPtcrtric constant <k)"
,75, 10, 10
5220
4140 LOCATE 12,17:PR INT"1.0 for a i r "
3,,25 :PEN 2:PRINT"Press any key to return to
5230 IF INKEY*=" THEN 3230
4 150 LOCATE 12, IB: PR I NT "2.0 feflon <F- TFE > "
4 160 LOCATE 12,19:INPUT "2.26 for polythene":k
3240 GOTO 190
4 I 70 Z—ROUND< I '.H/SORO ) «LQGl 0 < D.'e > , 21
5250 REM
4180 CLS
5260 REM
«1V0 SOUND 1,75,10,10
5270 REM FREQUENCY WAVELENGTH •
4200 FOR a-1 'O 760 STEP 5
3230 REM
4J 10 DEG
5290 REM
5300 CLS:PEN 1
4220 PLOT 300,15®
4270 PLOT 300»83*COS<a),lS0*OS"SIN(a)
5310 PRINT TAB <6> 'FREQUENCY/WAVELENGTH CONVEP.S I ON"
4240 PLOT >00*20«COS<a) , 1S0• 20"51N <<1)
5320 PEN 2
4250 NEXT
5370 LOCATE 3,9:PR INT"1.Frequency to Wavelength"
4260 PRINT TAB<01"COAXIAL CABLE IMPEDANCE"
3J4C LOCATE 9,10:FRINT"2.WavelenQth to Frequency"
4270 PEN 2
S3S0 PEN 1
4 280 LOCATE 10,5: PR I NT "lmpedenrp = " : / ; CHRK191 1
57-60 SOUND 1,75,10,10
4290 PEN 3
PEN 3
4700 LOCATE 25 ,11: PR INI CHRI (200 > CHf<» < 200 I CHR* < 209* : LOCATE 26,12:PR1NT CHR*(1)CH 5370
538Q LOCATE 12,_13: INPUT "Select Optjon-ja
R* < I I ) : LOCATE 26,16: PR IN 1 "D" : LOCATE 26,21:PRINT t:HRi
5390 IF a 1 OR
THEN S3O0
I 1 1CHRI (1lfl> : LOCATE 2S,22:PR1NT CHR J < 203 ) CHR i < ".'MB) l*HR J (7"0B)
5400 IF a-I THEN CLS:G0T0 5420
4310 I nCAlE 22, 1 4: F'R INTLOCATE 22, 16: PR INT'd" : LOCAIE 22, 17: PR1NT"_"
3410
IF
a=2
T
H
E
N
CLSxGOTO
5570
4 320 PEN 1
5420 PEN 1
4330 SOUND 1,75,10,10
5430 PRINT TAB(B)"FREQUENCY TO WAVELENGTH"
4340 LOCATE 15,23:INPUT "More Y/N":a*
5440 FEN 2
4750 a*=UPPER* la*)
54S0 SOUND 1,75,10,10
4 560 IF a f — " Y " THEN 4040
5460 LOCATE
5,B:JNFUT "What
the Frequency in MHz";F
4370 IF a*-"N" THEN 190
5470 LaR0UND(300/F,2)
4 380 REM
3430 PEN 1
4390 F(CM
^49© LOCATE 10,12:PRINT F "MHr - " L "Metret;4400 F<EM • OPEN WIRE IMPEDANCE *
5SC3 SOUND 1,75,10,10
4410 REM •
5510 PEN 3
4420 REM
5520 LOCATE 15,23:INPUT "More Y/N":at
4430 CLS:PEN I
5530 SOUND 1,73,10,10
3~40 a*=UPPER*(a*>
4440 PRINT TAB <0'"OPEN WIRE LINE IMPFDANCE"
3330 IF at="Y" THEN 5700
4450 SOUND 1,73,10,10
5560 IF a*-"N" THEN 190
4460 LOCATE 5,8:INPUT "SpacihQ between wirps <S>~:S
5570 PEN 1
4470 SOUND 1,73,10,10
5580 PRINT TABl8>"WAVELENGTH TO FREQUENCY"
4430 LOCATE 3,12:INPUT "Diameter of wires (d)";d
5590 PEN 2
44VB SUUND 1,75,12.10
3600 SOUND 1,75,10,10
4500 Z-ROUND I 276*L0G 10 <S7d • S0F< ( ( (S7d> 2) -1) > ,2)
5610 LOCATE 2,9:INPUT "What is the Wavelength in Metres";L
4510 CLS
5620 F-ROUND < 7Q0'L,2>
4520 PRINT TAB <8 >"OPEN WIRE LINE IMPEDANCE"
5630 PEN 1
4530 PEN 1
5640 LOCATE 10,12:PFrINT L "Motres =- F "MHr"
4540 FOR A—1 TO "60 STEP B
5650 GOTO 3300
4330 DEG
5660 MEMORY 41999
4360 PLOT 230.150
3670 FOR 1=42000 TO 42lQ9:READ a* : v*VAL < "V+ai ) : csum=csum+vs POfvE l,v:NEXT 1
4570 PLOT 270*2S«C0S<a),I30*23«5INfa>
5680 IF csum 26226 THEN PRINT CHRf(7>:FEN 2:PRINT"Data Checksua Error - check 1
4SQ0 PLOT 360,IS0
1 sting?":PEN 1:ST0P
4590 PLOT 36T0*25*COS<^> , l50«2S«SJNla>
5690 CALL 4»'000: PRINT CHRf<2SS)iCLS
4600 NEXT
3700 CATA 2A,5B,BB,22,El , A4 ,21 ,27, A4,22,5B, BB, 3E ,C3,32,5A,BB,3E ,CF ,32
4610 PEN 3
4620 LOCATE I7,16:PRINT CHR1 (1 > CHFcf <81 : LOCATE 19, 16: PRINT "S": LOCATE 21,16:PRINT 3710 DATA £0 ,A4 ,E9, F3,E5, D5 , C5 ,32, E4 , A4 ,FE , 20,39, 35, FE ,FF ,20,07, 3E ,00
5720 DATA 32,E3,A4, 18 , 25 ,FE ,FE, 20,07 ,3E,FF, 32,E3.A4 , 19, IA,3A,E3 ,A4 ,FE
CHR*(1>CHR* «9>
5730 DATA 00 , 29 ,09, 3A ,£4 , A4 ,CD, 79, A4 ,18 ,0B,C I , Dl ,E1 ,F1, 3A,E4 , A4 ,CD ,E0
4630 LOCATE 26,14:PRINT" " : LOT" ATE 26 , 16: PR INT "d" : LOCATE 26, 18:PRINT"-"
5740 DATA A4,C9,C1 ,D! ,El ,F1 ,C9, FE ,0A ,20, EC , 3A,E3, A4 ,FE ,00,2B,E5 ,3E ,0A
4640 PEN 2
5750 DATA CD,E0,A4, 1B,DE , 47 ,CD, Aa , A4 ,CD, 78, BB ,CD, 87, BB,22,CE, A4 , 7D ,FE
4630 LOCATE 10,10:PRINT "Impedanr.o =" 2 CHR* < 191)
5760 DATA 01,20,04,2C,22,CE,A4,2D,CD,75,BB,~E,F£,CD,5D,BB,2A ,CE,A4,CD
4660 50UND 1,75,10,10
5770 DATA 7S,BB,3E,FF ,CD,E0, A4 ,C9 , CD, Oi ,B9,C5, 78, CD, A3, 68,06,08 , 1 1 , D0
4670 PEN 1
3780 DATA A4 ,7E , 1 2, 13 , 1 2 ,27, 1 3 , 10,FB,F1 , CD,0C, B9,3E ,FE ,21 , DO , A4 ,CD, A9
4680 LOCATE 15,73:INPUT "More Y/N-;a«
3790 DATA BB,3E,FF,21,D8,A4,CD,A3,BB,C9
4690 a«"^UF-PER»<*«l
5B0B RETURN
4700 IF j*-"Y" THEN 44ilfl
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Contests are a natural application of computers to amateur radio. After all, the purpose of a contest can be stated as gathering data, (the calls and reports of stations worked) in such a way as to avoid duplicates. When working contests in a manual (non-computer) mode, if you desire to avoid duplicates, you usually have to keep two sets of records for each contact. The log entry has to be made, and a duplicate sheet of some kind has to be kept to give real time notice of potential duplicate contacts.

Major contest operators do things quickly. When one is working a pile-up, the calls have to be logged quickly and accurately: duplicates have to be weeded out speedily. For that reason, the job of contest logging is dedicated to one computer. If the station log, comprising general QSO data, as well as logs of past contacts, is available on disk, a second computer can be used to scan that log in real time, and notify the operator of previous contacts. This is a great piece of one-upmanship, for now you can not only tell other stations that the QSO is a duplicate, you can also tell them why haven’t they received your QSL card, and why haven’t they sent you one? if you have the time and inclination.

**Requirements for a Good Contest Program**

The use of a good contest logging program simplifies the paper work during and after a contest and allows the operator to concentrate on working stations. During the contest, the operator has only to perform the following tasks.

* Enter the call sign of the station worked.

* Enter the report received.

* Enter the call sign of the station worked.

* Tell the computer to log the contact.

The computer takes care of the rest of the data handling. The computer thus performs the following tasks.

* Keeps a check list in memory to notify the operator if a contact has been made on the same (duplicate) or another band.

* Stores the contact data in a floppy disk file.

* Keeps a check list in memory to notify the operator of previous contacts.

* Enter the call of the station to be, or being worked.

* Stores the contact data in a floppy disk file.

* Enter the report received.

* Tells the computer to log the contact.

* Enter the call sign of the station worked.

* Enter the report received.

* Enter the call sign of the station worked.

* Enter the report received.

* Enter the call of the station to be, or being worked.

* Stores the contact data in a floppy disk file.

* Enter the report received.

* Enter the call of the station to be, or being worked.

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* Enter the call of the station to be, or being worked.

* Stores the contact data in a floppy disk file.

* Enter the report received.
buffered by the program, once an entry is written to the log. It is gone. This command is used to Flag an entry on a prefix. If you want to look at all the calls in the log book/check list, enter an asterisk as the prefix and you will get a list of every call in the check list in the order in which they were put into a pile-up or pass it by.

W Enter the Transmitter Power used in Watts into the log book.
M Enter the Mode used in the contest in the log. You may enter anything, but the most commonly used ones are SSB and CW.

* This command terminates the program. It saves the data associated with the last 12 contacts in a file with the .CHK extension and the call of the station being worked. It is useful for the log.

The use this information will be put to depends on the reason you are in the contest. If you are looking for new countries, you will know who to call. If you want to win and make many new contacts, you still have the option to spend a little time to pick up new ones. I find that I do recognise certain calls and exchange greetings on an annual basis. With this program, I can recognise all previous contacts and remind the other station of the fact. Perhaps contest contacts may become a little more than a rubber stamp QSO, at least among regulars.

THE CONTEST LOGGING PROGRAM

The Contest Logging Program listed in Figure 1 is a stand-alone program. That means that it may be run as is, without the second (data-base) program. It is the latest version (at the time of writing) of several generations of contest logging programs. This version is written in BASIC for the IBM-PC and compatible family of computers. The following brief outline is presented as an aid to following the operation of the program.

10 Error trapping vector
20 Heading
30 Setting up and defining variables (equates for 4000 contacts)

The following bands are recognised: 10; 15; 20; 40; 80; 160; 600; 800.

90 Enter name of log file. It usually the name of the contest, such as WPX85, or RD85. The program adds the file extension .LOG automatically, and creates a backup (BAK) as needed.
140 Reads the previous contacts into the log, after the program has been terminated during a break in the contest operation.
150 Subroutine to set up the prompt line.
220 Subroutine to reset the prompt line.
230 Subroutine to set up the current data line.
240 Subroutine to re-arrange the date and time strings.
270 Subroutine to check if the call has already been worked.
360 Subroutine to accept the report received.
370 Subroutine to accept and override the log file information.
390 Subroutine to set up the 'power' information for the log.
420 Subroutine to set up the 'mode' information for the log.
430 Subroutine to accept and process the call of the station being worked.
520 Subroutine to fudge a contact.
570 Subroutine to log the contact (puts the data in the log and check list).
600 Subroutine to display string data of previous 12 contacts on screen.
710 Subroutine to open and close the program, and name the log files.
800 Subroutine to display prompt line at bottom of screen.
890 Subroutine to display all calls in the check list, in the order that they are in the list.

THE DATA-BASE (log book) SEARCH PROGRAM

The second program is run on a second computer. It contains the logs of previous contacts in one large data-base. As the contest logging program is being run, whenever the operator enters a call sign to be checked, the same call sign is output to the second computer and a search of the data-base (old logs) is made to see if the call is in the log. If it is, all previous contacts are listed, if not, a message is displayed which results from an alphabetical response to the BAND command, where BASIC is looking for a number, not a string. The following is a typical band name for a DX contact.

You may also use this information will be put to depends on the reason you are in the contest. If you are looking for new countries, you will know who to call. If you want to win and make many new contacts, you still have the option to spend a little time to pick up new ones. I find that I do recognise certain calls and exchange greetings on an annual basis. With this program, I can recognise all previous contacts and remind the other station of the fact. Perhaps contest contacts may become a little more than a rubber stamp QSO, at least among regulars.

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The variables and parameters used in the program perform the following tasks.

B() Binary code for each band.
B% Index into B() and B1() for Band in use.
B1() Bands.
BANDS Number of Bands recognised.
F User Band information.
F1() Part of Check List for band that CGS was made on.
F2 Temporary band information for scanning check list.
G% General integer variable.
J General variable (index into check list).
M() Size of check list (maximum number of QSOS).
N4 Valid QSO count.
Q% General integer variable.
A$ User Answer String (holds operator input).
BLANKS Line of space characters.
B$ Band.
C$ Call of station being worked.
C4$ String containing allowable control characters.
CSS Call of previous contact.
D$ Formatted date.
DATE$ BASIC date string.
E$ Title.
L$ Name of contest log book.
LOS Current QSO line.
L1-S1-L3S Previous QSO lines.
MS Mode.
N4S Temporary QSO number string.
PS Transmitter power.
QRS QSL received information.
QSS QSL sent information.
RS Report received.
RS1 Default report value.
SS Report transmitted.
SIS Default transmitted report value.
TS Formatted time string.
TIMES BASIC time string.
W$() Calls worked (check list).
XS Comments (used to hold received contest data).

THE DATA-BASE SEARCH PROGRAM

The second program is written in DBASE2 and assumes that the main station log book is kept in an indexed DBASE2 data file with the following structure.

<table>
<thead>
<tr>
<th>FLD</th>
<th>Name</th>
<th>Type</th>
<th>Width</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>DATE</td>
<td>C</td>
<td>008</td>
<td>Date on format YY/MM/DD</td>
</tr>
<tr>
<td>002</td>
<td>TIME</td>
<td>C</td>
<td>004</td>
<td>Time on format HHHMM</td>
</tr>
<tr>
<td>003</td>
<td>BAND</td>
<td>C</td>
<td>003</td>
<td>Band; eg 10, 20, 40</td>
</tr>
<tr>
<td>004</td>
<td>CALL</td>
<td>C</td>
<td>003</td>
<td>Call sign</td>
</tr>
<tr>
<td>005</td>
<td>RX</td>
<td>C</td>
<td>003</td>
<td>Signal report received</td>
</tr>
<tr>
<td>006</td>
<td>TX</td>
<td>C</td>
<td>003</td>
<td>Signal report transmitted</td>
</tr>
<tr>
<td>007</td>
<td>MODE</td>
<td>C</td>
<td>004</td>
<td>Mode of QSO; eg SSB, FM</td>
</tr>
<tr>
<td>008</td>
<td>POWER</td>
<td>C</td>
<td>004</td>
<td>Transmitter power</td>
</tr>
<tr>
<td>009</td>
<td>QSLSEN-</td>
<td>C</td>
<td>001</td>
<td>QSL sent information; eg B</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td>(bureau)</td>
</tr>
<tr>
<td>010</td>
<td>QSLRX</td>
<td>C</td>
<td>001</td>
<td>QSL received information; eg R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(received)</td>
</tr>
<tr>
<td>011</td>
<td>Comment</td>
<td>C</td>
<td>010</td>
<td>Comments and notes</td>
</tr>
</tbody>
</table>

The index is given the same name as the log file using the statement INDEX ON CALL TO log book where log book is what you called the log. The floppy disk will thus hold two files, namely the actual data-base (LOGBOOK.DBF) and the index file (LOGBOOK.NDX).

The DBASE2 program to find the call in the data-base log is listed in Figure 2. The reason that it is so small is because DBASE2 is a great language for playing with data. The program starts by initialising the variables and then enters a loop. The loop accepts a call sign or prefix from the terminal and searches the log for it. If one is found, all calls beginning with the prefix are displayed. If the prefix or call is not found, a message to that effect is also displayed. The loop terminates when an asterisk is entered as the call sign, which is the same code for terminating the contest program.

INTERFACING THE PROGRAMS

Up to now, two programs running on separate computers have been described. In order to make them work together they have to be interfaced. This interface task is a custom task and may have to be performed in a different manner for different computer pairs. The Contest Program has to modified to output the call sign to the second computer. It is recommended that this be done via the RS-232 Communications Port. Line 115 should be added to OPEN the relevant communications port (COM1 or COM2 at the Baud rate desired or as needed by the second computer). Line 445 should also be added to output the call sign (C$) as each new call is entered by the operator. Error trapping should be added at line 385 so that if something goes wrong with the RS-232 interface or the second computer, the contest program does not bomb, but will continue to work in a degraded manner in which the extra facility provided by the second computer is no longer available. It would also be good practice to add line 755 to close the communications link when the program is terminated. Typical examples are:

125 OPEN "COM1:1200,N,8" AS # 4
525 PRINT # 4,C$
845 CLOSE # 4
965 IF ER= 445 THEN RESUME 350

In this example, the serial port is opened as a 1200 Baud, no parity, eight data bits and one stop bit communications line.

The second computer should preferably be one with a separate RS-232 CRT terminal. If this is the case, its interface cable can be modified by removing the wire from the keyboard and routing it to the serial port connector of the first computer instead. Many eight bit machines run CP/M-80 and DBASE2. A program, possibly also in BASIC, should be run on the contest computer so that it acts as a remote terminal so as to start-up the second computer, load DBASE2 and enter the CALLFIND command. As this is a software article there is not really space to describe the customisation process in detail. If you are not sure of what to do, there is probably someone in your local club who could advise you.

GETTING DATA INTO THE DATA-BASE

In order to use the two programs together, the DBASE2 data-base should have some data in it. This means that entries from old log books need to be copied into the computer. If the log is large it may take a long time to do that job (a great way to spend your time while "reading-the-mail"), so a DBASE2 program called UPDATE listed in Figure 3 may be used to speed-up matters. This update program is optimised for entering data from old contest logs into the DBASE2 database.

The first entry should be made manually using the APPEND command in an interactive manner to set the date, mode and power information. The UPDATE program is then
POST CONTEST DATA-BASE UPDATES

Once the contest is over, the log file must be corrected using a word processor to delete any fudged entries. A program to do this job was available in the original package described in my book Software for Amateur Radio (TAB BOOKS number 1560), but has not been converted to Microsoft BASIC because it was found that some editing was always performed on the logs and why not delete the error lines at the same time.

Serial numbers can be added to the comment space in the log and the report area set properly by the LOGCONV program listed as Figure 6. This program reads each line of log information, strips the report part from the comments and puts it into the report space (line 110) and adds the serial number of the contact into the comments space (line 120). When the program has done its job, the original log has been renamed with a .RUN file extension while the converted log data file has the extension .LOG.

The log file is now ready to be converted to a DBASE format file for further processing. If the second machine, that contains the data-base is not an IBM-PC or compatible, the contest .LOG file has to be transferred to a disk that the second machine can read using one of the format transfer programs readily available.

First invoke DBASE. Next generate a blank log book data-base file either by CREATING one with the same structure as the big one, or copying the structure of the big one onto the new one as follows:

USE logbook
COPY STRUCTURE INTO contest
USE contest
INDEX ON call TO contest

The contest log is then appended to this data-base log file using the DBASE statement APPEND FROM contestlog.LOG SDF DELIM which will copy the log data into the data-base.

You can then display, or print, the call signs in the contest log in alpha-numerical order to check for duplicates, prefixes or whatever. You may even get displays of contacts on different individual bands by using variations of the DBASE command DISPLAY ALL FOR BAND = "xx" where xx is the band you want displayed.

The temporary contest log data-base can then be appended to the main station log book data-base with the following two statement.

USE logbook INDEX logbook
APPEND FROM contest

The main log book data-base is then ready for the next contest or any further data-processing and analysis desired.

SUMMARY

This article has shown how two computers, each running separate programs written in different languages, may be linked together into a multi-tasking operation during an amateur radio contest. If two machines are not available, it is still worthwhile to use the programs separately in series. The contest program is run during the contest, the data then transferred to the data-base file format and checking can commence. Other programs written in DBASE2 may then be used to generate DXCC records, perform QSL functions, or what you will!

FOOTNOTE: Joe Kasser was first licensed as G8BTB in 1966, and received his current call sign in 1970. His interests in amateur radio are wide-ranging and cover everything from QRP to satellites. He served as the editor of AMSAT's publications from 1974 to 1981. He has many magazine articles and two books, on the subject of micro-computers and amateur radio, to his credit. His latest efforts are the applications of micro-computers to amateur radio. At present he is an international consultant in the fields of micro-computers, systems and electronics.
bottle — now removed from the rig — he absented
the possible development of an issue over the big
Cedric VK4CJ, through no fault of his own, failed
never now be known — but what is known is that
as simple as offering an extra cup of tea to achieve
favour, is practiced by everyone daily; maybe it is
sized bag of mixed fresh fruit”.

“Quick, whip out and buy a decent
of his mouth;
visibly agitated, produced a handful of silver from
that Cedric VK4CJ was present at the time. Frank,
and so it was that Frank was caught — with his big
capable of
big bottle
VK4JU resorted to the
20 metres hardly any of this power got into the sky
the PMG expected it to be observed within
the hour — like the infamous Melbourne weather.

Brisbane’s main city thoroughfare, Queen Street,
and, considering his poor QTH, his achievements
in DXing and contests occupied much of his time

The fraternity has always had its share of colour-
ful characters and one of Queensland’s best
known in the 30s was Frank VK4JU. He will be
remembered by his rather uncertain temperament; at times Frank’s mood could change by the
hour — like the infamous Melbourne weather.
However, all this was far outweighed by his contributions to amateur radio.
Technically quite knowledgeable, he had the
uncommon ability of being able to impart know-
ledge clearly and could have been a competent
teacher. Franks claimed to have coached the first-
ever young lady to become a PMG telegraphist in
South Wales, where he took out a VK2 call sign
Some years after the conclusion of WWII, he
QSYed to the suburb of Randwick, Sydney, in New
South Wales, where he took out a VK2 call sign
and his sending, a little slower, but still immacu-
late, was heard for many more years. Like old
wine, he mellowed with maturity and eventually
died quietly in his sleep in his 70th year — one of
the real characters of the early days.

AUTHORS NOTE: During a visit to VK4JU’s
shack, Frank sent out a CQ in his most perfect
code. A local replied in a dreadfully sloppy fist.
‘Just listen to that,’ said Frank in utter disgust,
“that’s an insult to Samuel Morse — he’s sending
with his b... left foot! The only way to teach
these mutilators a lesson is to give ‘em a dose of
their own medicine”.
Whereby, he tore off his left shoe and sock and,
leaping up onto the rig table, placed a big toe on
the key (the cord being too short to put the key on
the floor) and proceeded to send an even sloppier
reply, finishing with “How’dya copy?”
“Good,” was the reply, “you did better than the
first call. Have you changed keys?”

Does anyone have a close-up photograph of
Frank? — VK4SS.

Figure 5 — Log Conversion Program.

FRANK NOLAN VK4JU (SK)
Not to be confused with VK4FN — Funny
Thumbsketches

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ful characters and one of Queensland’s best
known in the 30s was Frank VK4JU. He will be
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first call. Have you changed keys?”

Does anyone have a close-up photograph of
Frank? — VK4SS.
The program generates groups of 10 lines of five characters each, sounding each line in CW and displaying them on the computer monitor after being sent. The program-user copies each line as it is sent through the monitor speaker and after receiving all ten lines the result is compared with the displayed lines for correction purposes. (So no cheating!!)

After checking the results, any key except T is pressed for another set of 10 lines. The speed setting is arbitrary as I do not know a suitable algorithm for speed entry in WPM.

It is not necessary to press Return after each set of lines.

Here is a handy little program to help limited and/or novice licensees to brush up on their CW.
An OMNI-DIRECTIONAL 2 METRE VERTICAL

Described is a unity gain vertical antenna for the 2 metre band.

The antenna is made out of RG-58 coaxial cable and enclosed in 25mm PVC conduit.

CONSTRUCTION

Using approximately 3.1 metres of RG-58 cable, carefully strip off 425mm of braid from one end (so inner is exposed). Then cut off about 200mm of the inner conductor and solder an identical length of braid to that just removed from inner.

Cut off 1.5 metres of 25mm PVC conduit, measure down 850mm and drill two 9mm holes 45mm apart. Feed the RG-58 through the upper hole (trimmed end) until it is flush with the top of the conduit. Form a nine turn coil with the other end of the cable around the conduit and pass it through the lower hole out the base of the conduit and then pass it through the lower hole and out the base of the conduit.

Temporarily tape the top of the aerial to the conduit and check the VSWR. This should be about 1.15:1 at 146 MHz rising to about 1.4:1 at either end of the band. Minor tuning can be effected by altering the length of the top section.

Having checked the tuning, pull the top section of the aerial tight and fold it over the end of the conduit (about 5mm over end) and slip a 25mm end cap over top. This will hold the aerial reasonably tight inside. Drill a 9mm hole in another end cap, pass the coax through the cap and use it to plug the bottom of the conduit. Drill a small drain hole if required. Wrap the coaxial coil with good quality tape to hold it firm.

Care should be taken in the choice of conduit as some have varying amounts of carbon in their composition which can greatly alter tuning and performance. Conduit used in this model was 25mm class 12 (white) AS 1477/85051 manufactured by Hulmes Australia. This and the caps are available at plumbing outlets.

The antenna is a unity gain type (performance comparable to that of a dipole) but still gives good results. It is easy to make and can be built in about an hour. No originality is claimed for the electrical design, as it is based on commercial designs.

Ian Keenan VK3AYK
6 Pretoria Street, Caulfield South, Vic. 3162

AMATEUR RADIO, May 1986 - Page 17
With low cost memory chips becoming readily available, it was decided to use them to take the hard work out of calling CO on the new WARC bands. It was because of the interest of Lindsay VK5GZ, in activating these bands that prompted the writer to develop the following designs.

The static RAM chips used were the 2102L because of their ready availability and low price, even though it would have been nice to have used the 2102K as it is in short supply at the time (and expensive). The other desirable features for the designs were:

The use of readily available parts.

- The ability to key the transmitter either manually by key, or automatically via the keyer without disconnecting the key keying and the chokes or memories, until stopped manually.

- Enough memory time available so that a pause can be left at the end of the message to listen for any replies to the CQ call before the message's restart. This allows the operator to take control of the transmitter if an answer is heard in the silence period.

- The messages to be easily inserted and changed without the burning in of ROMs or programming of EPROMs. This flexibility was decided on even though it means enabling each key each time the power was disconnected.

- Ability to be used as a code practice oscillator with, or without, using the memories.

- Usable as a teaching aid to the newcomer trying to master the Morse code. This ability to record, then listen to the playback of one's effort is quite revealing. Any dits that are clipped, or poor spacing are quickly revealed.

- A continuous speed adjustment from about three to 30 words per minute.

- An audible (with volume and tone adjustment) as well as visual indication of the keying.

- Switchable memories so that several messages can be recorded, stored, then selected as required.

- Automatic cancelling of the write enable as the memory or memories become full so that over-writing of the message/s cannot occur. This also returns the keyer to the beginning of the recorded message/s.

- (Replay of the message then commences until the last word is reached and the keyer goes silent.)

- Recording to be able to be stopped, resumed, or cancelled during the record cycle.

- Manual reset to the beginning of the message to be transmitted before or at any time during the transmit cycle.

- The ability to stop, hold, then continue transmission at any time during the operation of the keyer without sending out a signal during the hold period. Transmission can then be resumed from the place from which it was stopped, or reset to the beginning of the memory originally selected, or to a new memory if a different message is desired.

The two memory keyer circuit to be easily converted to a single memory version if it is decided that one memory has enough capacity for normal CO calling, or activating a dead band.

**EXTRA FEATURES OF THE FOUR MEMORY KEYER**

Four memories of 1024 bits are used, each being controlled by a switch on the front panel. A memory distributor controls the use of the memories selected by four switches. Rotation in one memory from left to right only, is going from one to four and back to one etc, continuously until manually stopped. These memories are not required by the OP when switched into use.

- Any one, or more, of the memories can be used, using a CO QSO so that each can be pre-programmed with, eg the CO call, OTH details, type of rig, antenna, etc.

- A binary display using five LEDs is used. A green LED (the reset) for 0 and four yellow LEDs 1 to 15 are used to give an indication of the remaining time left in each memory (good experience in reading binary), a green LED also shows which memory is being accessed at this time. This system can easily be changed to a digital display if the builder desires to experiment, or it can be left out all together.

**SIMPLE ONE OR TWO MEMORY CIRCUITS**

This is ideally a CO so to the learner who requires a Morse code practice oscillator, and a means of generating and recording practice groups of characters to improve sending and receiving at different speeds. Memories can be used either singly or in series. The characters can be entered at a slow speed, and when confidence in receiving improves, they can be played back at a faster speed. Also it gives a chance to hear just how good one is sending. This allows for correction to be made and monitored.

The circuit is also very good as a CO caller on dead bands (just ask Lindsay VK5GZ). It allows the operator to be doing other work in the shack at the same time as activating the bands. As soon as a reply is heard, manual operation is then resumed and a QSO, that may not have eventuated, may then be worked. (Some of the amateurs using these keyers are VK5NM, 5PH, 5NDR, 5BM, 5NBG and 6LC, as well as other VK, ZS and G operators who have been sent construction details).

- (Lindsay has been using the two-memory version for nearly three years. He can explain his operating system later.)

- By deleting the two switches (4 PDT), and one of the memories, plus a couple of resistors, a simple memory version can be built. This makes it easier and cheaper to build, but less flexible to use.

**GENERAL CIRCUITRY FOR ONE/TWO MEMORY VERSION**

The heart of the unit is the 2102L 1024 bit static RAM. The 4040B, a 12-stage ripple counter, is driven by clock pulses derived from a pair of NAND gates (U4A and B). These pulses have been through a D flip-flop (U7A) to even up their duty cycle (frequency is also halved). U4C is controlled by the RUN/HOLD key so that the clock pulses to the chips cease during the HOLD period. When the 4040B goes high the pressed outputs of the 4040B go-low, and counting does not start until the RUN/HOLD switch is in the RUN position. U5A and U7B control the READ/WRITE pulses to the 2102Ls. Pin 13 of U7B, a D flip-flop, goes high when the RECORD button is pressed. This allows data to be entered into the 2102L from the Morse key via USC once S3 is in the RUN position. Outputs from the 4040B, in conjunction with the READ/WRITE pulses to the 2102Ls allow the storage of the data into the memories from the key via USC and the IN pin of the enabled 2102L. The polarities on the chips enable pins 13 (CE) of the 2102Ls to determine which one receives the data. The chip is enabled when pin 13 is low.

Initially, if both memories are to be used, pin 11 of U7B is high after the RESEt button has been pressed. (Output from pin 15 of U1 to pin 12 of U7B is low and output to pin 11 of U7B is high as it follows pin 11 of U4D). It is not until pin 11 of U7B goes low then high again that the flip-flop U7B toggles holding pin 5 of U5A low. This prevents further recording. During the record period, the output of U4B goes low (after pin 15 of U1 goes high) disabling U2 and enabling (U3), the second 210L. If only one memory is to be used then pin 11 of U7B will be low after RESEt and U7B toggles the first time that its pin 11 goes high, it follows pin 15 of U1. (The two MEMORY SELECT switches take care of the difference between one or two memories as regards the correct chip to be enabled and the starting of the recording at the right time). USB ensures that during the HOLD condition no output to the keying transistors is obtained from pin 12 of the 2102Ls. (The hand key is still active if in use). The spare gates in U6 are used as an audio oscillator to drive TR6/7 which amplify the keyed audio to the built-in 8 ohm speaker. LEDs indicate which memory is being used, when recording can take place, and when keying is in progress.

**FOUR MEMORY KEYER**

The general circuit is much the same except for the selection of the memories. The four memories can be used singly or up to four in series. They are controlled by the memory distributor circuitry consisting of U7A and B (one shot oscillator) U8A and B (dual D flip-flop), and U9 (quad 2 input NAND gates A-D). An extra green LED has been added to show when the key...
has been reset plus the binary count orange LEDs.

CONSTRUCTION
All versions so far have been built up using vero board and IC sockets. (There have been enough faulty CMOS chips to warrant the extra expense of sockets, as well as simplifying initial point to point testing — a logic probe was invaluable for fault finding). The layout is not critical. The longest job is the commoning between the memories and the 4040B. There has been available, a commercial universal memory board from Tandy (part no 276-184). It could be cut in half giving two-four memory and one 4040B positions which cuts down the wiring time, especially with the four memory versions. The two-four memory versions are not that hard to construct if Lindsay's vero board layouts and metal box templates are used. He will supply these, plus test-out details (if required). If you would like this information, then please send him (QTHR) $2 for postage, photostating and packaging. Darryl VK5IN, has been organising the production of a commercial PCB that can be used for either the single or double memory versions. This should become available soon. (Because of the obvious advantages of a PCB, this article has not been published earlier). Please refer any queries to Lindsay regarding construction of boards.

The only problems encountered over many prototypes has been with the values of the resistors R12 and R13 (nominally 4k7 in series with the chip enable pin 13). Due to differences in this, it has been necessary to reduce these resistors to 3k3 and even 2K7 in some cases, for reliable operation. On later trouble-shooting it has been discovered that it may be better to change the values of R6 and R9 from 10k to 27k, and reliable operation of the green LEDs driven by TR1 and TR2 is still OK even if R8 and R9 are 47k. A small capacitor C13 (0.001uF) from pin 4 of U4 to +5V or ground was added. This was necessary to ensure what was thought to be a parasitic oscillation in some 4011B chips. RF feed-back was not found to be a problem even with the prototypes bread-boarded on the bench. Allowance has been made just in case. The RF chokes were made of 20-30 turns of fine wire, wound over a high value old style half-watt resistor and the units built in metal boxes. Some transceivers, eg FT707, had such low keying voltages that a protection diode in series with the transmitter keying lead must be omitted for satisfactory keying of the transmitter. The original keyers were built for operation with the Icom range of transceivers so a single BC548 easily handled the keying voltages and polarity. Since then, provision has been made for high voltage on the keying line, eg T5280S etc. Also, keying polarities varied so both the BD139 and BD140 (available from the SA Division ESC) were incorporated to cater for all transceivers. The four PDT switches are DSE S-1301 and are best wired before installing, leaving the six flying leads to then be connected. The power supply can be either external or internal. The keyer can be built into quite a small space if required. My four memory version, including the power supply, fits into a metal box measuring 50 x 100 x 150mm. Two circuit boards were piggy-backed.

OPERATION (written by Lindsay VK5CG)
By setting the memory speed control to its slowest speed, switch the RUN/HOLD switch to HOLD, then press the RESET button. This resets the memory to the beginning. Press the RECORD button to put it into the RECORD mode, the RECORD LED lights up. It is now ready for recording. Put the RUN/HOLD switch into RUN and commence sending Morse at a speed of five words-per-minute. It should hold about five words during entry you will see the CW monitor LED blink as it follows the dots and dashes. An audio note — volume and tone adjustable — will be heard. When the memory or memories are full the RECORD LED goes out. The memory switches itself back to the start and prevents over-writing. Cease sending. Playback of your recording will commence unless switched to HOLD. Replay can be sped up by advancing the speed control.

Now try and put in a normal CQ call. Advance the speed control to around one-third, then re-program the memory as above. Commence the sending at your normal operating speed. If you finish 10 seconds before the RECORD LED goes out, it means that the speed control can be advanced a little more. If the RECORD LED goes out and the replay commences to jam your sending before you have keyed in all of your message, it means that the speed control must be eased back a little. After adjusting the memory speed control, repeat the above until you get it correct. Now try loading in a longer CQ call using the same speed. This entails the memory holding more information than your last CQ call, so the speed control must be eased back a little more, before commencing to send.

When operating at a normal operating speed of 15 WPM, I like to have about a three-second pause on listening before it commences another CO call. I operate my receiver CW Vt. At about a speed of 7WPM. This saves the transmitter switching from transmit to receive all the time, also you do not hear all of the ORM on your own frequency. At fast operating speeds, it is bad enough thinking up the sentences to send, then sending it one word at a time, and transferring the Morse dots and dashes into twin paddle movements.

When you understand all of its operation, you can plug the output of this memory keyer into your transceiver. It is recommended to leave the key lead at its normal length (the memory may be out on loan) and make up a new shielded lead with a 3.5mm plug for the memory unit end, and a 6.5mm plug for the transmitter end.

Upon entering my shack, I switch on the power to my transmitter, the keyer, and the memory unit. After checking the speed setting of my paddle keyer, then the memory speed control, press the RESET and RECORD buttons, switch to RUN, then put out a live, on-air, CQ call while it is being recorded. It can now be slowed to 6WPM or advanced up to 30WPM. The VOX time is naturally lengthened or shortened, so you could, switch to HOLD and listen, just in case you have missed a late caller, then go back to RUN. It will carry on sending where it left off.

During transmit operation, the audio of the memory can be turned down if it is preferred to listen to the receiver monitor. The contents of the memories can be changed at any time. Once the message has been recorded, make sure that the RECORD button is not pressed unless it is desired to change the contents of the memory.

ELECTRONIC MAIL CATCHES ON
A high demand has resulted in Australia Post increasing its number of electronic mail centres by 25 percent.

The expansion will mean that 145 centres will be equipped to receive; transfer and deliver Intelpost.

Launched two years ago, Intelpost has the first public service of its kind which could transfer customers' documents across Australia, to 80 percent of the population, in two hours.
AERIALS and EARTHS

The half-wave wire is a basic radio aerial, and the most usual type is a dipole, which is a centre fed exhibiting feed impedance depending upon its height above ground of approximately 70 ohms. If, with a vertical dipole, the lower quarter wave is removed and that side is connected to earth, we have a monopole. Assuming perfect earth the feeder connected to earth meets zero resistance. Thus the impedance of the monopole is half that of the dipole, that is 35 ohms. Since the current flowing into the earth meets zero resistance, there is no loss of power. However, in practice, there is always some earth resistance so that, neglecting the resistance of the aerial, the actual earth resistance of the monopole is in fact 35 ohms, plus the earth resistance. If the earth resistance is say 15 ohms, the total impedance will be 50 ohms. The power consumed in the 35 ohms produces radiation, but there is very little radiation from the power consumed in the earth resistance. The antenna efficiency in this case would be 35/50 or 70 percent. If the earth resistance were reduced to zero, the efficiency would be 35/40 or 88 percent, only 0.5dB worse than for a perfect earth. If the monopole is shorter than a quarter wave length and resonated by series inductance, it will have an impedance of less than 30 ohms, and earth resistance losses will become more significant for such a shortened aerial.

GROUND PLANE

The ground plane aerial is a quarter wave vertical radiator which does not require direct earth connection and consequently has no earth resistance loss. In this case the earth connection is replaced by four quarter wave horizontal radials and the current flows via the four radials instead of the earth. Since currents in each pair of opposite radials are equal and opposite, radiation from the radials is therefore cancelled, so they have no radiation resistance. Their conductor resistance is small. Therefore, they act in the same way as an almost perfect earth. (The above would be strictly true if opposing radials were coincident in space. Since, in practice, they are separated by up to a half wavelength at their tips, it is only a good approximation.)

The ground plane has two advantages over the monopole. It has negligible earth resistance and in most situations can be placed well above ground level, clear of obstructions. The impedance as stated earlier will be the same as that of a monopole (35 ohms). There have been some disagreement about this actual value. The RSGB Handbook states that it is less than 20 ohms whilst the ARRL Handbook indicates it is about 30 ohms. A series of articles by VK2BBF, AR August - October 1984, analyses theoretically the impedance as a function of height above ground. Considerable variation is possible. Ed. Approximate measurement can be made by the following technique. A feed point at the mid point of a known impedance when feeding a ground plane. If a two metre model GP fed by a 50 ohm cable is constructed and trimmed to provide minimum SWR, it is found to be approximately 1.4 (and thus the approximate impedance of the GP is 50/1.4 = 35 ohms).

As both pairs of opposite radials are doing the same job of cancelling radiation from the desired low-angle omni-directional. Ed. The erection of a GP aerial for the lower frequencies will be simplified if the radials are sloped downward. If this is done, the currents in the radials will no longer be of opposite phase and, in consequence, there will be radiation from the vertical component of the current. The radials will then have some radiation resistance which will vary as the angle of slope. Thus, if the radials are bent horizontally in one plane, the impedance increases from 35 to 70 ohms. In general, for radials at an angle A below the horizontal the impedance will be 35 + 35 sin A ohms. To match a 50 ohm feeder, 35 sin A ohms should be 19 and sin A 15/35 = A = 26 degrees.

This calculation was checked by making a two metre GP aerial with two radials. It was fed through a 50 ohm aerial cable and was trimmed for minimum SWR. This measured 1.5, indicating an impedance of 33 ohms. The radials were then bent downward progressively and the SWR was found to decrease until it reached 1.25 at an angle of approximately 25 degrees. As the angle was further increased, the SWR rose until it was again 1.5 when the radials were vertical, forming a dipole with an impedance of 50 x 1.5 = 75 ohms.

This experiment supports the above theory and brings about a different concept of a GP. It can be considered as a vertical dipole in which the lower quarter wave is split into two (or four) conductors and these conductors are bent up to the horizontal in opposite directions to cancel their impedance.

Viewing the GP aerial as a folded-up dipole, another way of matching the aerial to a 50 ohm feeder is to bend the dipole in such a way that the vertical component is in line with the SWR meter. The dipole is moved away from the centre, the impedance at the feed point is increased. When the radials of a GP are shortened and the vertical is lengthened by a similar amount, this is the same as bending the aerial away from the centre and increases the impedance. This was investigated using a GP aerial for two metres with two horizontal radials and a vertical (adjustable for length) and fed by a 50 ohm coaxial cable. Initially the radials
were cut to 16 inches, instead of 20 inches, and power was applied. The vertical was adjusted for minimum SWR. With a vertical length of 24.5 inches, an SWR of 1.0 was measured at 147.700 MHz and 1.2 at 146.500 MHz. Apparently, a GP aerial can be matched in this way. To match a 50 ohm feeder the ratio of radial to vertical would be approximately 2:3.

METHODS OF MOUNTING A GP ANTENNA

The easiest way to install a GP aerial is to place it on a tilt-over pole such as described in AR March 1964. The tilting pole need only be six metres long and can be made from 75 x 75 mm timber. The fixed pole could be a three metre treated pine pole about 100 mm diameter set one metre in the ground. With these sizes, a winch will not be required to haul it up, especially if the bottom end is counter weighted. A pole of this type, erected at VK5JG, did not require guys even when carrying a 10 MHz GR. The antenna itself can be made of aluminium tubing bolted to the top of the pole. As this is a low impedance point, no special insulation should be required. The vertical should be cut to the formula 469/IMHz feet. The two radials can be 14 or 16 SWG or stranded earth-wire. They can then be tied at the lower end via a connecting rope, to a fence post at head height. To provide the required SWR, the lengths can be adjusted to —

2.4 metres approximately for 28 MHz
2.8 metres approximately for 24 MHz
3.3 metres approximately for 21 MHz
4.0 metres approximately for 18 MHz
4.9 metres approximately for 14 MHz
7.0 metres approximately for 10 MHz

A saw cut at the upper end of the lower two, plus two stainless steel hose clamps will enable the tubes to be clamped at any of the above lengths. A pair of flexible wire radials, 7.3 metres long, fitted with a screw clip at the end can be adjusted to length by looping back through an end insulator. Extra clips will be required for 28 and 24 MHz. If this aerial is mounted on a six metre tilt-over pole needing no guys, it should be possible to change frequency in less than five minutes if the correct settings of the tube and radials are marked. Tube sizes suggested are 25.4 mm (1"), 22.23 mm (%") and 19.05 mm (%").

The possibility of including a 7 MHz aerial in this set up was considered, and so a 7 MHz GP aerial was constructed. I had a 10 metre stout tilt-over pole available, fitted with a winch. Telescoping aluminium tubes of 28 and 25 mm diameter, forming an element 10.05 metres long, was bolted to the pole with the base six metres above ground and the top extending to six metres above the top of the pole to form the vertical. No guys were used. This has withstood strong winds so far, but it remains to be seen whether the top six metres of unsupported tubing will bend in a gale. It has proved very satisfactory for 7 MHz working and has an SWR of 1:1. Considered as a bent-up dipole it also works on 21 MHz. This has proved to be the case although it was a little short for 21 MHz and had an SWR of 1:9. By temporarily adding 0.4 metres to each radial, the SWR was brought below 1.5.

No doubt this 7 MHz GP could be made mechanically safe by the addition of guys, but the multi-band quick-change facility would be lost.
A PORTABLE THREE-ELEMENT BEAM ANTENNA FOR TWO-METRES

The writer's normal mobile two-metre operation is carried out from his car, which is fitted with a mounting cradle, cabling for an 80 watt linear and a rear mounted, removable five-eighth whip. If this car is out-of-service for any reason — it is 16 years old — he is immobile as his wife's small car must not be modified in any way!!

This started an idea for a portable, external aerial for stationary-mobile use. And why not make a proper job of it, at the same time? Thus was born the concept of the portable three-element beam antenna. When finished it took less than which to assemble and erect.

The 4.75 metre high portable mast consists of three pieces, 1290mm long, of 19mm (%") aluminium tubing, cut from a standard four metre length, and an 850mm long wooden extension to allow vertical operation. The construction is shown in Figure 1 and is simpler than it looks. The bottom end of section one was formed into a spike to grip the ground. Section two has a 120mm length of 16mm (%") aluminium tubing. 3-6mm (%") clearance holes are drilled as indicated, for the three-elements, which are cut for 146MHz. Make sure that the holes are exactly in the same plane, otherwise your beam will look very unprofessional. The elements are kept in place by locking them with self-tapping screws at 90 degrees. Mark the centre of each element with a ring of paint, for easier assembly. On the boom itself, mark the point of attachment to the mast clamp in the same manner.

The gamma match arrangement and the connection of the feed-line are shown in Figure 3. The plastic section used is a 100 mm piece of flexible connection, which can be detached for vertical operation. The gamma tube is easily pressed into one of the rails, which spring open and firmly to hold the tube. It was found that the SWR was affected by the length of the feed-line, therefore some trial-and-error matching was required to finally improve the tuning after setting the gamma match to optimum. Since the coaxial socket for the feed-line is permanently attached to the boom, a flexible connection, which can be detached from the gamma tube, is required. Again, do not lose the screw.

Although it may be difficult to obtain short lengths of the various tube sizes, fellow amateurs may be helpful. The actual construction of the gamma match, although fiddly, is not difficult.

GAMMA TUNE

To tune the gamma match, assemble the beam to Section four — good practice — join sections four and one and drive section one into the boom. Connect the feed-line — about 5.50m — to the antenna and the transceiver ground. Connect the feeder cable — about 3.4 metres apart. Gently push up the mast until the two lines are extended and the mast is reasonable vertical.

Hold on to the third guy line take it to the 120 degree position relative to the others and secure by a tent peg.

Correct the mast position to be properly vertical, push it about 20mm into the ground to stop it from turning with every gust of wind. You can rotate the beam by hand due to the free guy ring.

Connect the feed-line to the rig and start operating.

My wife made me a carry bag from canvas, 1400mm long and 800mm in diameter. It comfortably accommodates the whole antenna. Do not forget to put in a small screwdriver to tighten all the assembly screws; it has also been found handy to carry a few spare self-tapping screws and some extra tent pegs — they have a habit of disappearing in deep grass.

THIRD PARTY TRAFFIC

Information has been received from the Department of Communications regarding Third Party Traffic in Papua New Guinea.

The Department wrote to the PNG Post and Telecommunication Corporation seeking their views on the possibility of obtaining an agreement concerning Third Party Traffic by amateurs in Papua New Guinea.

The PNG administration replied that it is not their policy to permit TPT in the amateur service except in special circumstances. In addition, their present licensing conditions and regulations prevent PNG entering into an international third party agreement with other countries.
Figure 1 (Half Size).

Figure 2 — Boom Clamp Bracket (Full Size).

NOTE: JOINT 2-3 IS IDENTICAL WITH JOINT 1-2

SECTION 4 16MM WOODEN JOWEL (5/8")

Figure 1 (Half Size).
Figure 3 — Gamma Match (Full Size).
Figure 4 — Boom (Not to Scale). Note: Use locking screws for all elements.

Figure 5 — Guy Ring (Full Size).

Figure 6 — Antenna Layout (Scale 10:1).
PLUMBING INTO ANTENNAS!

Whilst experimenting with a side-fed delta loop antenna, which was published in the second antenna book of RAA, the writer pondered about a connection which is not only removable, but also weather-proof.

I didn't have to think too hard, because my trusty 'plastic plumbers delight' connection box, which has been used for a number of years, certainly came in handy.

Just a few small modifications were necessary on this occasion. The little gadget, which was constructed, is totally weather-proof, has plenty of room inside to accommodate a balun, as well as only being used for termination into coaxial cable. I have three in use at the moment and a couple more on the shelf.

My endfed wire antenna goes through one of these "pots" also and the banana plug is easily disconnected when a threatening thunderstorm is approaching. As I am so happy with this termination arrangement I thought it might entice some other amateurs to try this too. The costs are around $6 to $7 including the PL256 plug.

As the accompanying diagrams indicate, there is nothing really that needs explaining. It is simple and made in no time at all, even by people with two left-hands. It is necessary to use plenty of PVC glue around the cap to ensure no water can enter around the joint. It may also be a good idea to use some silicone rubber around the screws and lugs, but it must be of the non-acid type.

The ventilation hole in the disk is of importance for releasing air which expands when the sun is heating the "can".

AR

ADDENDUM to Propagation via Reflections from Aircraft

Page 4, Column 3, last sentence before "Observations"... even though this may BE the rest of an aeroplane'.

Page 4, Column 3, Observation 6, last part of third paragraph should read — '... is not clear whether or not turbulence is always reported when aircraft enhancement is poor, or whether or not aircraft enhancement is always poor when turbulence is reported'.

Page 5, Column 1, first full paragraph should read — 'In the case of Sydney stations although they are heard in Frankston earlier than AT VK9UMs, the time difference ...'.

Page 5, Column 1, Observation d, third paragraph should read — 'In any case what exceptional lift conditions? Between Canberra and Melbourne? Sydney and Melbourne? Both? Or between Sydney and Canberra perhaps?'.

Page 5, Column 2, first line of text below Figure 1b, should read — 'In Figure 1b a REFRACTIVE layer of air'.

Page 5, Column 3, Figure 1c — 'It isn’t labelled!'.

Page 6, Column 2, first line of text after Signal Strengths should read — '... his suggestion that SAV VK1BGs signal ...'.

Page 7, Column 1, paragraph a after "Consider the following" should read — 'Obviously if the distances DECREASE the path loss will decrease'.

Page 4, Column 1, the formula for effective area of an isotopic antenna is — $A = \frac{2}{4 \pi}$. 

UK WORKERS COMPUTE

By the end of the decade more than half of Britain's workforce will regularly use computer terminals.

Already, about 1.25 million Visual Display Units (VDUs) are already in use and sales of word-processors; personal computers and larger systems continues to grow.
This program was especially designed for the Apple II Plus Computer however, it should work on any of the Apple II series of computers.

With a simple bit of software, a signal demodulator and an HF receiver, you can convert those funny warbling tones, so often heard on the amateur bands, to text on your Apple® computer screen.

The following program was designed for the Apple II series of computers. The program starts off by looking at memory location $C061, associated with pin two of the game port, until a start bit, logic zero, is detected. This starts off the following chain of events.

First, a register of the 6502 microprocessor, known as the Accumulator, is set up to act as both a counter and a store for the received teletype.

A delay of one half of the time taken for one data bit to be received, 11 ms in the case of 45.45 baud, is then executed. After this, the received signal is in the middle of its start bit. A delay of the time taken for one data bit to be received, 22 ms in this case, is then executed, so as the received teletype is in the middle of its first data bit.

The logical value of this data bit (0 or 1) is then read and stored in the bottom end of the Accumulator, moving everything already in there one place to the left to make room.

A one bit time delay is then executed, to put the received teletype signal in the middle of its next data bit. The logical value of this data bit is then read-in exactly as before and the process continues until all five data bits have been read.

Once this is done, the Accumulator contains its five bits, a binary number between 0 and 1F hex. This value is then checked to see if it is a figures shift ($1B) or a letters shift ($1F). If it is a figures shift, then memory location $0803 is set to $20. If it is a letters shift, then memory location $0803 is set to $90.

Next, an index into a table of ASCII equivalent characters is calculated and the appropriate ASCII character is selected from the table and outputted to the computer’s video screen.

The program then goes back to the start to look for another start bit and the whole process is repeated.

ENTERING THE PROGRAM

The program is entered with a machine code assembler, or from the Apple's machine code monitor program.

IN OPERATION

In use, a RTTY signal at 45.45 baud must be tuned in on a fairly stable receiver with the capability of resolving Single Sideband (A3J). The receiver is generally set to Lower Sideband and the receiver is tuned until the demodulator 'locks-in' on the signal.

If garbage is printed out, shift to the other Sideband and re-tune the receiver, as the station may be transmitting an inverted signal. If there is still no success, you may be listening to a station using another Baud-rate, it may not be five bit RTTY, the message might be coded, or the station has a frequency shift unresolvable by your demodulator. Note also that noise, either from your receiver or your computer, can seriously affect the signal.
A unique club station BY4AOM is on-air from Shanghai — to be club members you have to be an old-timer.

Each member held an amateur licence in the years prior to 1949 and some of the old boys were active in the mid-1920s with the prefix XU, which later changed to the prefix C.

The Chinese Government, under the then chairmanship of Mao Tse-Tung, prohibited amateur radio in 1949, and the hobby has only been permitted in recent years through club stations.

Thanks go to Chief Operator of BY4AOM, 66-year-old Cieh Di-hau (John), ex C1TH, who supplied the details for this article.

The average age of the club members is 63 years, and in their first five months on-air they have worked five continents and 34 countries in about 800 contacts.

There are about 30 old timers in Shanghai, but some are too old and in poor health to operate BY4AOM, whilst others are still working and are too busy to enjoy amateur radio, but about ten old boys come to the station once a week, usually on Sunday afternoons.

John explained that about 40 VK contacts had been made, including one with Bill VK4WC, who has been in the hobby for more than 40 years. Bill asked BY4AOM to pass some QSPs to Mr Feng C1KF who Bill remembered working in the 1940s. The request was passed on to Feng, now in his 70s, and he was most pleased to know that he was remembered by his fellow amateur radio friend.

BY4AOM members — C1TH; C1HT; C1TH XYL; XU8EC; C1MK; C1SP; C1HY; C1CH; C16C and C1ZZ. XU8WM was absent when the photograph was taken.

The antenna is mounted on top of a four storey building at the Shanghai Institute of Electronics and is about 25 metres above ground. It is fed with 300 ohm television ribbon, which goes into the transceiver via a home-brew transmatch and SWR meter.

The Club has plans to open a class to train high school boys and girls aged around 15 years to become radio amateurs. John said that the old boys plan to get amateur radio started in some of the universities and colleges in Shanghai.

BY4AOM’s Chief Secretary, Tang Zung-ye (Tom), ex XU8WM, said he would welcome any technical books or magazines for the Club’s library and youth training project. Their postal address is PO Box 227, Shanghai, China.

John reflected that there is no doubt that the hobby of amateur radio is not only a highly technical past-time but its activities promote the friendship and understanding between people of different nationalities and beliefs.

The BY4AOM QSL card has two lines of ancient Chinese script. One means Within four seas there are bosom friends, and the other People in the remotest corners of the world are neighbours.

How fitting to have this touch of age-old Chinese culture on the QSL card.

The Club’s main rig is a TR7 100W transceiver. Club members have home-brewed a two element four band (20, 15, 10 and 6 metre) boomless cubical quad antenna and rotator.

John, ex-C1TH.

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During the 1986 John Moyle Memorial Field Day Contest, Gil Griffith VK3CGG ventured to the Mount Buffalo Chalet, at an altitude of 4500 feet, to operate and participate in the Contest. Gil’s forte was Section B, transmitting in Morse. This was his third entry in a contest since obtaining his AOCP in December 1984.

Conditions were too windy to erect a 160/80 metre vertical, but an 80 metre dipole with a tuner worked well on all bands, except 160 metres.

Eighty contacts were made, but the lack of numbers in Class B was quite disappointing.

Gil used a 90 amp-hours battery which was on-charge (1 amp) all day on the Saturday and Sunday, and the battery was down to 11.5 volts under full load (20 amps), however, most of the time it was only using 700 mA on receive and 9 amps on transmit with 20 watts output. He operated from 0600 UTC Saturday to 0600 UTC Sunday, with four hours off for a nap and some breakfast, when the bands were quiet.

The Chalet Manager, Mr Michal Atlin, was most co-operative with the whole exercise and has also kindly provided Gil with some postcards, which he will be using as QSL cards.
OPERATING IN IRAQ

This article began in early 1984, when Ray VK5DI began corresponding with Saad YI1BGD, to confirm that individual licences had been issued in Iraq. Amateur radio history in Iraq was rather sketchy and Saad, and others intended using Ray’s call sign, YI2FD, as a precedent in an attempt to have individual licences issued again. Ray used ex-military equipment whilst operating YI3FD during 1952-53, and during his stay in Iraq, witnessed one of the other amateurs worked WAS in 48 hours (48 States in those days). In early 1984, Lajos HA5DW, spent some mechanics were invited to a “Goulash Party” to install equipment and antennas.

In early January 1984, Lajos HA5DW landed at Baghdad’s modern airport. Lajos was a member of an eight-man crew from a Hungarian company. Over a period, Lajos had worked many operators through the Iraq Club Station, YI1BGD, and was now eager to meet with these operators.

The first meeting was with Majid Abdul Hameed, a founding member of the club and a pioneer in Iraqi amateur radio. On the way to the radio station, Majid explained that in the capital city’s two Institutes there are 60 different special spheres of interest — amateur radio is one of these interests.

After great efforts, the amateur group began in the 1970s, but few knew what this hobby was all about. The station was heard on the 20 metre band using a donated Atlas 210 and a home-brew two-element quad antenna.

Upon arriving at the radio station, Lajos was amazed at the comfortable, well-furnished radio room, complete with Drake equipment (a donation from King Hussein JY1). The station had a Drake 2Kw linear and Yagi, donated by the NCDXF, for the upper bands.

During the afternoon, Lajos was invited to use the station and was pleased to work many Hungarian stations and was henceforth able to pass news of his well-being to his family at home.

In the evening, Lajos presented Majid with Morse cassettes and an amateur atlas of antenna designs and Majid discussed his future plans for the station and for amateur radio in Iraq. Majid hoped to attain call signs for visitors and YI0 for special stations.

During the visit to Iraq, Saad told Lajos of one of the first amateurs in Iraq, King Ghazi. In 1937-38, he operated a broadcasting station until his untimely death in a car accident in 1939. Saad also told of Ray VK5DI/YI2FD.

Defence goes digital

Australia’s armed forces are upgrading their communications for the 21st century. The local telecommunications industry has negotiated defence contracts valued at $575 million. Projects include a common users message-switched network, and a digital secure voice, data, facsimile and telegraph system. Advanced microprocessor controlled manpack and vehicle radios will also be introduced.
FREQUENCY CALL SIGN LOCATION
50.010 JA12KYG Mel
50.020 JA6VBR Japan
50.075 V6S5X Hong Kong
50.109 JD1TJR Japan
50.132 J01JGJ Japan
50.213 P2B99L Loloata Island
50.220 FK8KAB Noumea
50.230 ZK26X Nius
50.220 VK6DFV Darwin
50.230 ZL2WVM Manawatu
50.310 ZL3NHM Hornby
50.320 VK55TT Wickham
50.410 VK2RSG Canberra
50.410 VK4RRG Geelong
50.410 VK4RTL Townsville
50.420 VK5SF Mount Lony
50.460 VK2TSQ Perth
50.470 VK7RRN Launceston
50.490 VK4JSF Spring Farm's
50.510 ZL3SSX Blienna
50.510 ZL2EWH Upper Hutt
53.010 VK5BQW Buselon
53.410 VK4KTT Mount Mowbullan
53.410 VK4RCC Canberra
53.410 VK4LRC Sydney
53.465 VK65RWB Albany
53.480 VK5DFV Darwin
53.480 VK5LSM Darwin
53.500 VK54RWSL Sydney
53.500 ZM5RSE Mount Gambier
54.600 VK69TST Wickham
54.800 VK5VF Mount Lony
54.800 VK5LRF Sydney
54.900 VK55GG Sydney
55.010 VK6RH Perth
55.035 VK6RSB Buselon
55.035 VK5PAB Sydney
55.040 VK6RST Wickham
55.320 VK62RSY Sydney
56.126 VK69RSV Burra
56.126 VK5NSK Sydney
56.200 VK5DTM Narrabri
100.000 VK69RFV Roleystone

7 watts output. Congratulations! Both operators hope this contact will lead to others taking more interest in the 23 cm band.

MOUNT ISA JOTTINGS
Steve VK4KHQ, writes from Mount Isa: "I enjoy reading your column in AR as it is interesting to see who is missing out!"

"A recent contact was on 2nd January 1986 from 0150 to 0200 UTC when I heard VK4KD calling on the Gold Coast Repeater, which also accessed VK4GKL in Mount Isa. I heard strong, but intermittent snatch of the QSO, no QSO was made. Maybe next time."

Also, the more I read about aircraft enhancement experiments, the more seriously I consider Mount Isa's position with relation to international flight paths and schedules to form a reliable monitoring pattern.

"With regard to six metre propagation, the 27 MHz CB band provides saturation coverage of VK and regular listening gives reliable indications of short skip conditions. Sometimes 15 metres is dead while the 27 MHz band is roaring with QRM proving where the MUF really is. Those scanning 15 metres declare the band dead!"

Thanks for your letter Steve. You are out on the proverbial limb to some extent in Mount Isa, particularly for two metres, but keep in mind the domestic FM band, 88-108 MHz, as a starting point for a rising MUF, and December 1986 should be another good year for long distance, two metre contacts, just like 1985.

END OF AN ERA IN DARWIN
A final letter has come from Graham VK8GB, indicating he was leaving Darwin on 26th February 1986, for a short holiday in Singapore and Hong Kong, and then on to Canberra to commence work in his new position on 18th March 1986. He included confirmation of QSLs from VK2ZB and VK9LC and hopefully with confirmation copies for ZM6GY will mean his six metre final tally from Darwin would be 42 countries.

That's a great effort and indicates, despite our somewhat unfavourable position on the globe, compared with the Northern Hemisphere, which means often more kilometre to be covered for a contact, not necessarily from Darwin to Canberra, to commence work in his new position on 18th March 1986. He included confirmation of QSLs from VK2ZB and VK9LC and hopefully with confirmation copies for ZM6GY will mean his six metre final tally from Darwin would be 42 countries.

Congratulations! In the July 1986 issue of AR, I will tell you what countries Graham has worked, the first contact being on 11th October 1977 and the last on 29th December 1985.

Naturally, Graham is going to find an entirely new ball game while in Canberra, but I am sure he will be making his presence felt. Opportunities will exist for him to add to his two metre tally, as well as operation on the higher VHF and UHF bands. Wherever you operate Graham, we all certainly wish you well and thank you for putting Australia on the VHF map of the world, firstly on six metres for such a great countries score, and secondly for so many QSOs on 27 MHz to Japan, which will still be quite adequate for many stations, even as far away as the USA.

SIX METRES IN THE UK
From 1st February 1986, all Class A licensees in the United Kingdom gained access to the six metre band between 50.000 and 50.500 MHz. Some restrictions have been placed on the power and antenna used, also, depending on where the amateurs live, there will be some restrictions, but operating time limits have not been imposed. All this is possibly for an interim period while the authorities study the impact of the opening of the band, particularly as it applies to possible interference in other countries of Europe still using the six metre area for other services.

Some of the limitations imposed make interesting reading. The maximum power is restricted to 25 watts on CW and FM, and 100 watts PEP for AM and SSB, and this is ERP; or effective radiated power. Thus antenna gain and feed line losses need to be considered. Antennas are to be horizontally polarised and no higher than 20 metres. No mobile or portable operation is permitted. With the power and antenna limitations, it would seem most stations will be operating in the 10 to 25 watts region, which will still be quite adequate for a lot of contacts as far away as the USA.

High power stations on the European channel 2 have 100 kW in Germany, Norway and Sweden, with the closest station being a low power device in Antwerp, Belgium, which unfortunately is vertically polarised, which means ground reflection is impossible for the amateurs. Effective beam antennas, directed towards USA, should help keep interference to a minimum, and at the time of writing, the power restrictions have been placed on the power and antenna limitations, it would seem most stations will be operating in the 10 to 25 watts region, which will still be quite adequate for a lot of contacts as far away as the USA.

ANTENNA STACKING
From The West Australian VHF Group Bulletin is a drawing and brief description of a device called a Coaxial Junction Box which can be used to feed up to four outputs from a single input connector. It is a lower cost alternative to the usual N-type connectors for harnessing VHF and UHF stacked arrays, the cost being around 30 percent of the N-type connectors it replaces. The device is made by Acme and could be worth investigating. Although no design parameters are mentioned, the drawing tends to indicate a well-made device.

ANOTHER THREAT TO SIX METRES
March 1986, QST and the World Above 50 MHz is where Bill Bynan W3XKQ expresses concern over a proposal filed by Donald Stoner W6TNS, where his petition calls for the re-allocation of 52 to 54 MHz from the Amateur Service to, what he calls, The Public Digital Radio Service and is envisioned by Stoner as some kind of super packet system of specially designed transceivers attached to personal computers. He refers to them as Radio Moderns which would exchange data at a very high rate of up to 300 or 400 characters per second, which can be used to feed a megahertz of spectrum space to accommodate a single channel. Many users would be able to occupy one channel probably through time sharing. Data would be transmitted through whatever series of radio modems would be necessary to get to the addressed unit.

The radio modems would include a power-management feature, each enabling each to harvest power from a maximum of one watt down to a few milliwatts, the automatic selection of level being that necessary to maintain contact with the next unit in the chain. The idea is that one has to be a person not having another radio modem within range would do it? W6TNS's petition states he selected the six metre band because "it is essentially unoccupied" and use of frequencies in this part of the spectrum would make the radio
"Flushed with this kind of success, I built a six element Yagi for 70 cm and have acquired two commercially built push-pull 4CXM250BC transmitters and have one on two metres already, and I am building a K2W1 amplifier for 70cm in the other. I also have all modes on 1296 MHz but the final is in the linear has died and will only replace it when I will have only 10 watts output. If it was not for the interference which work provides, I receive a number of QSLs direct — my address is not correct in the Call Book. For convenience the correct address is as below.

I am up and running on OSCAR-10. For the record, all antennas are fed with Heliax and I have masthead amplifiers for all bands. I will be happy to sched anyone for the winter DX season and look forward to summer 1986. QSL information: C/o Radio 747, Esperance, WA. 6450.

Geoff XE1GE, a well-known six metre operator.

Six metre QSL Cards on the Shack Wall at JA4MBM.

NEW SA TWO METRE RECORD.

I mentioned in the March issue that a brief two metre opening had occurred between VK5 and ZL which enabled a number of stations to work ZL for the first time. My note book at the time carried a comment that a vague report had been received of a station in Woomera working ZL on two metres. Not being able to verify the comment I did not mention it.

However, it does now appear that on 16th January 1986, Neil VK7ZEE at Woomera, did in fact work ZL1M, which upon verification will stand as a new two metre record for South Australia. Exact distance is unknown but would be around 3400 km which eclipses the former record held by Hughie VK7SB to ZL2HP at 3149 km set on 23rd December 1965.

I have not been able to contact Neil direct, but I telephoned Don VK7ZRG at Whyalla who was able to confirm that the contact had been discussed on the local repeater with Neil participating so it seems authentic. We offer our congratulations to both parties for such an effort and I expect to hear more in due course when the record is confirmed.

NEWS FROM ESPERANCE

David Lloyd, VK6AOM, at 23A Butler Street, Esperance, WA 6450, has written the promised letter which is set out below. All the local operators are looking forward to summer 1986. OSL information: C/o Radio 747, Esperance, WA. 6450.

Thanks for the letter David, it will give readers an outline of the potential of your station which must be placed in the category of being exceptionally well set up. I hope your present success will stir more to try and work you, especially with the 400 km bonus in the shorter distance.

As so happens with my further inland location, whilst all that great activity was going on between David and VK3 and 5, I had to be content with sitting on the side hoping the conditions would shift further inland, but they did not, hence I missed out again. My 60dB mountain attenuator was firmly in place as always on 70 cm.

“Flushed with this kind of success, I built a six element Yagi for 70 cm and have acquired two commercially built push-pull 4CXM250BC transmitters and have one on two metres already, and I am building a K2W1 amplifier for 70cm in the other. I also have all modes on 1296 MHz but the final is in the linear has died and will only replace it when I will have only 10 watts output. If it was not for the interference which work provides, I receive a number of QSLs direct — my address is not correct in the Call Book. For convenience the correct address is as below.

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As so happens with my further inland location, whilst all that great activity was going on between David and VK3 and 5, I had to be content with sitting on the side hoping the conditions would shift further inland, but they did not, hence I missed out again. My 60dB mountain attenuator was firmly in place as always on 70 cm.

"Flushed with this kind of success, I built a six element Yagi for 70 cm and have acquired two commercially built push-pull 4CXM250BC transmitters and have one on two metres already, and I am building a K2W1 amplifier for 70cm in the other. I also have all modes on 1296 MHz but the final is in the linear has died and will only replace it when I will have only 10 watts output. If it was not for the interference which work provides, I receive antennas built for 1296 also!

I am up and running on OSCAR-10. For the record, all antennas are fed with Heliax and I have masthead amplifiers for all bands. I will be happy to sched anyone for the winter DX season and look forward to summer 1986. QSL information: C/o Radio 747, Esperance, WA. 6450.

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However, it does now appear that on 16th January 1986, Neil VK7ZEE at Woomera, did in fact work ZL1M, which upon verification will stand as a new two metre record for South Australia. Exact distance is unknown but would be around 3400 km which eclipses the former record held by Hughie VK7SB to ZL2HP at 3149 km set on 23rd December 1965.

I have not been able to contact Neil direct, but I telephoned Don VK7ZRG at Whyalla who was able to confirm that the contact had been discussed on the local repeater with Neil participating so it seems authentic. We offer our congratulations to both parties for such an effort and I expect to hear more in due course when the record is confirmed.

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GENERAL NEWS

I am again holding over the letter from John VK5UL, regarding his early operations on the five metre band. I need more space than is available at the moment so will include same as soon as possible.

The photograph of QSL cards on the shack wall at JA4MBM carries many familiar six metre call signs and you may find it of interest to study it. I am indebted to Graham VK8GB, for this and also the one of Geoff XE1GE, a very well-known six metre operator who has worked many stations in Australia. I have had at least four contacts with him.

Generally speaking the VHF bands have been relatively quiet this month. This is not unusual after the Es summer period. What I do find interesting is how rapidly the Es seem to die out or else the operators tire, but the lead up through October and November sees quite a few good openings around the country, culminating in the best periods in December and early January. But come mid-January and the six metre band seems to flop and that is it for another nine months, except for an occasional opening which can come at any time.

Alterations to the Six Metre Standings must be on my desk by 15th June if you want to be included in the August update. And while on six metres, there were a lot of on-air comments regarding the pros and cons of the Ross Hull Contest but I have not had much feedback yet with your suggestions for improvement. Is it going to be left to the last minute again??

Closing with the thought for the month: Confess you were wrong yesterday; it will show you are wise today 73 — The Voice in the Hills.

Amateurs that attended the Maitland Mob get-together. From left to right — front to back: VK2s KQ; KF; DH/P; VO; PZ; TY (inr); TY (snr) was 2SH; UI; XT was SH; AMM; CW; YJ was AJE; AJV was EP; XQ; ZC; GH was XH; CX was JE; KZ; KB; KG; AHA; OS; AAX was AGY. The receiver in the photograph is a 1922 home-brew unit. The gentleman in the dark jacket, mid-front is Russell Troy. He is not an active amateur now but still does his own shopping on a push-bike.

The “Maitland Mob’ Get-Together

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When we analyse the recent past and project the immediate future, computers and communications technologies play a vital part, but we must avoid the tendency to look only to the hardware level. The fact that technologists have appropriated words like ‘communications’, ‘information’ and ‘data’ and given them electronic rather than social meanings, should not disguise the fact that in the final analysis, communications involves people and ideas, not electronic bit and bytes.

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AMATEUR RADIO. May 1986 - Page 35
Well! The ARRL are now going to allow DXCC credit for 18 and 24 MHz! My personal thoughts are that I cannot agree with the ARRL Directors' decision to allow this DXCC credit and apparently many amateurs were backtracked from the inception of the usage of the band in that country.

A lot of readers will say that I do not agree with anyone and they are probably right but this move has been received in many countries. The DXCC that was won for us by the amateur societies throughout the world. Also, not all amateurs have WARC band s for 10, 15, 20, 40, 80, for DXCC. Also, not all countries have allowed DXCC credit to get an

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Special call signs for the venture will be GB4IOS and GB8IOS.

The local harbour master for the capital island of St Mary’s, Colin Oakley, himself a radio enthusiast, will be acting as the party's co-ordinator.

Apart from anticipating plenty of radio contacts, the party will raise funds for the British Lifeboat Institution — particularly appropriate gesture in sea-faring Scilly!

It is interesting to note that during his wireless pioneering days, Marconi ventured to the Scilly islands and relayed signals back to the Cornish mainland.

**BITE FROM HERE AND THERE**

Beware of OY7ML who is QRV on weekends. It could be a pirate as the real owner of the call is mostly QRV on week-ends after 1800 UTC. **Carlo IS3EO, was quite active as KC8CM earlier in the year. Please GSL to the home call.**  
**Iris** and **Lloyd** made 6 500 contacts from A2 and hoped to work from yet another country before returning home to the USA. **Don’t miss the USSR CQ ‘M’ Contest on the 10th and 11th of this month.**  
**ZL7AA** is quite active from Chatham Island and can be worked on the 40 metre net of Eric ZL2AQ. **William IOWW, US Ambassador to the Holy See suggests late this month or early next month will be the time to work 1AQKM, when it should appear.**  
**Hans DK1RV, states that anyone with little luck could have been well on the way to the ultimate with their DXCC last year as there were 273 countries on the air. Not to bad pickings for anyone starting out but a poor show for anyone with their eye on the ARRL DXCC countries on 10 through to 160 metres and that’s excluding the WARC bands. Congratulations on your tenacity Henry!**  
**Don** and **Jim** left Pitcairn on September 20th and will be active until the end of next month. * * Another unusual call TV6BFI, will also be active till the end of next month. * * The Norwegian Government have not issued permission for any current plans to operate Bouvet or St Peter 1 Island as of when these notes were being prepared in mid- March.

**PITCAIRN**

I had the pleasure recently of meeting Jim G3OKQ/VU6JRH/VK3AUT, to name but a few of his current call signs. Jim was also PX10K, later to become C31BY, when he was signing out of the Andorra’s, some years back.

Jim, on a brief visit to Melbourne, was accompanied by his charming wife Noreen and they were the guests of Ron (VK3OM) and Lynette Fisher, during their stay in the Garden State.  
**Jim** had been the guest of Tom and Betty Christian VR6TC and VR6YL, respectively and their four daughters Jacqueline, Raelene, Sherilene and Darlene, since the beginning of June last year, whilst he was assisting in reconstructing the wharf at Pitcairn.

Jim left Pitcairn en-route to New Zealand, where he met Noreen and journeyed on to Melbourne.

**PITCAIRN’S HISTORY**

Pitcairn, an island of one of the most isolated group of islands in the world and is located at 25 degrees 4 minutes south by 150 degrees 8 minutes west. Pitcairn itself is 3.2 km long by 1.6 km wide. The island group consists of Ducie, Henderson, Oeno and Pitcairn. Pitcairn, which is the only inhabited island, had a census of 64 people at the last count. Of these, 31 are actual islanders, the others being a medic, school teacher and pastor with their respective families.

The island group was discovered in 1767 and originally named Pitcairn’s Islands, after its discoverer, but in latter years the s has been dropped and it and the other islands are referred to as Pitcairn Island.

In January 1790, nine mutineers of the HMS Bounty, accompanied by 12 Polynesian women and six men, left Tahiti and were not heard of again for nearly 20 years. They arrived at the uninhabited group of islands and decided to settle on Pitcairn.

**One of the Bounty’s Anchors.**

The land on the island was divided among the mutineers and the natives were used as slaves, and as such were very poorly treated. The early years were quite violent, so badly so that all of the six Tahitian men and seven of the mutineers met violent deaths. One of the two remaining men died of respiratory trouble, leaving Alexander Smith, the sole surviving male.

In 1808, the island was visited by the Topaz, whose crew found the small community of Tahitian women and half caste children living under the pastoral care of Alexander Smith (later changing his name for some unknown reason to John Adams) who had become a devout student of the Bible and Book of Common Prayer salvaged from the Bounty before it was burnt on their arrival on the island. He was allowed to spend the rest of his life on the island with the surviving women and children.

By 1856, the population on Pitcairn had increased to such a degree that the island could not support them and the British Government evacuated the island’s entire population to Norfolk Island, which was stocked with sheep, cattle and horses for their benefit. Norfolk had been used as a convict settlement until 1865, where life was rather unpleasant, but that is a story on its own. (The main population of Norfolk, incidentally can be traced back to the Pitcairners who arrived at that time.

Within 10 years most of the Pitcairners had moved back to Pitcairn where they have remained. This has formed the basis of the families today that happily live on the island.

**Church.**

The islanders are deeply religious. An American missionary arrived around 1886 and converted everyone to Seventh Day Adventism and hence the word of the church is law. This provides a harmonious atmosphere and no one on the island can recall a major crime.

As there is no natural harbour, ships are required to anchor of the island’s shore and the islanders row out to receive mail, etc and sell the trinkets that have been made on the island.

**Ships Landing Point.**

The history of these islanders is enthralling reading and most libraries have or can obtain a number of books which are well worth reading including one book which traces the dialects used on both Norfolk and Pitcairn in detail.

As stated previously, Jim had gone to assist in repairing the wharf, which was in quite a state of disrepair due to the tides, even though it can only handle the Long Boats, which are vessels approximately 12 metres long, and can carry a capacity of up to five tonnes and have a shallow draught, as Bounty Bay is only about two metres deep at high tide. Jim said ‘at times they unbelievably looked like match sticks being tossed around in the shallow water’.

**John Adam’s Grave.**

Unfortunately the islanders are not able to maintain the memorial to the man who first established the island. There is no record of a person named John Adam, but in 1827 the two remaining islanders were being prepared in mid-March.
Jim left home on the 18th May last year aboard the 229 tonne cutter Vibke, with a Danish registry, hence the unusual call of G30KQ/0Z/MM which he used for his 190 SSB contacts from the 45 metre long by nine metre beam sailing vessel whilst en route to the Pitcairns. The vessel arrived correct to schedule on the 1st of June, anchoring off Bounty Bay and unloading all the supplies into the Long Boats. This was a very slow business due to the cargo weight and the prevailing weather conditions.

Jim recalls, that whilst working on the island, at times waist high in water, welding mask in one hand and electrode holder in the other with about 40 volts potential and untold amperes available, it was quite uncomfortable when a wave hit you, which was quite frequent. Incidentally the tide swing is about one metre.

The weather on this friendly island is quite temperate, the lowest temperature being about 12 degrees, the highest 30 and an average in the comfortable mid-20s. The island is well above sea level, the highest spot being some 336 metres ASL and the area is very undulating allowing little cultivation though the soil is very fertile.

This island boasts two dogs, many cats, one rabbit, six ducks, many chickens and one tortoise. Fishing is a way of life and it was interesting to see Jim's videos of the difficulties experienced in beaching the longboats and of the mountainous terrain with such proximity to the beach. Luckily they have a little beach buggy, 15 tri-cycles, one bulldozer and a couple of tractors.

Amateurs are not scarce on this out-of-the-way small island. Firstly one would have to mention the Marconi of Pitcairn, Andrew Young who was born in 1901 and had the call sign VR6AY, then Tom and Betty VR6TC and VR6YL, Kenny Young VR6KY, Ng Brown VR6KV, who is also the Islands Police Officer and a new licensee Irma Christian who uses the call VR6ID.

Jim did most of his operating from Tom's QTH and had nearly 12 000 SSB contacts on 20, 40 and 80 metres using his trusty TS120 from battery power and his antenna tuner. Jim on occasions used Tom's TH3 at 12 metres but generally used dipoles strung as high as possible.

Sincere thanks are extended to the following: The Editors of weekly, biweekly and monthly newsletters including the ARRL NEWSLETTER, BARG, CO-OSO, DX FAMILY FOUNDATION NEWSLETTER, INSIDE OX, JAN and JAY O'BRIEN'S QSL MANAGER LIST, K8BBZ REPORTS, LONG ISLAND DX BULLETIN, OR2 DX, RSGB DX NEWS and THE WESTLAKE'S AMATEUR RADIO CLUB NEWSLETTER. Magazines including BREAK IN, CDX, DX CO, DX CO, ARRL NEWS, KARL NEWS, PACIFIC ISLANDS MONTHLY, QST, RADCOM, VERON and WORLDAMANT. Members who have contributed include VK2 2HD, PS, AAB, EBX, 3OM, YL, 6HD, G3NRC and L30042. Overseas amateurs include AE1JE, ZL1XH, ZL1YV, W2KDJU and ZL1HAM and AMN. Thanks to one and all who have made this column possible.

Photographs on Pitcaim island (including cover) courtesy of Meralda Warren.

THANKS
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CONTEST CALENDAR

MAY

3-4  County Hunters SSB Contest (See comments below)

4  South Texas Run SSB (See comments below)

4  Florida QSO Party

9-10 DARBC RTTY

10-11 USSR QM Contest

10-11 New York State QSO Party

17-18 ARI International Contest (Rules April issue)

17-18 Michigan QSO Party

24-25 CO WW PXW CW Contest (See comments April issue)

27-28 1986 CLARA AC/DC "Mystery" Contest (Rules March issue)

JUNE

11-12 1985 VK Novice Contest (Rules this issue)

28-29 AARL Field Day Contest

JULY

12-13 IARU Radiosport

26-27 Armadillo Run CW (See comments below)

ARMADILLO RUN

I quote directly from notes supplied to me by Frank Anzalone W1WW, who is the DX Columnist for QST magazine and would point with some emphasis to the VK5 involvement in this event. 

"SSB — 3-4 May. CW — 26-27 July. 0000 UTC Saturday to 2359 UTC Sunday (Rest period 0800 local)."

The Texas DX Society is again sponsoring this popular activity. This years run is in commemoration of the Texas Sesquicentennial (150 year of statehood). This promises to be a special run for all of us. There are at least 3076 US Counties, plus a newly created Armadillo County. The new county will be recognised from 2nd March to 31st December, not only for the two weekends of the year, but also available for the CQ USA-CA awards program. You will note that the dates and times are the same as for the County Hunters Contest. The events, and other features are also the same. (County Hunters rules also included below — VKSQX).

There will be special Armadillo Run stations on between 1300 and 0100 UTC Saturday and Sunday, activating their assigned counties on 20 and 40 metres. Scoring is the same as the CHC Contests, with the following additions:

- Australian counties will also count as multipliers. Armadillo County, Texas counts five times QSO points. South Australia counts 10 times QSO points. And any US station counts five times the QSO points. (Since 1986 is also the 150th Anniversary for South Australia, they plan to run joint activities with the Texas Armadillo Run).

- There will be awards, more than can be covered in this edited announcement. I strongly advise interested amateurs to send a large SASE to Tom Taormina K5RC, 12810 Barbizon, Houston, Texas. 77089, for a copy of the Armadillo Press with all the details and a list of regional coordinators.

Logs to The Texas DX Society, 350 Magnolia Bend, New Caney, Texas. 77357, and must be received within one month after the contest date.

While the above, with regard to VKS stations and South Australia may seem a little confusing I can only interpret it to cover the fact that a VK5 station could be operated from a state other than VK5 in a portable/mobile capacity. (VKSQX).

(A brief resume of the event was published in December AR, p.28.)

COUNTY HUNTERS SSB CONTEST

From 0001 UTC Saturday to 2400 UTC Sunday, 3-4 May. (Rest period from 0800 to 1200 UTC each day). This is the 15th Annual Contest sponsored by the Mobile Amateur Radio Awards Club, to increase activity for the County Awards program. The two four-hour rest periods are mandatory.

Emphasis is on mobile operation. Fixed stations may work other fixed stations, but only once regardless of the band. Mobile stations may be worked from each county or band change. Mobile contacts should be counted as one QSO, but two multipliers. QSOs made on a net frequency do not count.

Exchange — Signal report, county and state, county lower case, county number. (Mixed mode contacts are permitted provided one station is on SSB). Points — Contacts with a fixed VK5 station, one point (including KH6/KL7). Contacts with US mobiles, 15 points. Contacts with US mobile team, 30 points (both operators participating).

Final Score — Total QSO points, times the total number of US counties worked.


Awards — Plaques to the first and second place US counties, first place US/CANadian, DX station, and Mobile Team. Certificates to the top 10 mobiles and to the top scorers in each state, province and DX stations.

It is suggested that you send a large SASE to WASD6T, for detailed rules and log sheets. All entries must be received by 4th June, and go to Brianninger WA5Q8A, Box 65, Randolph AFB, Texas. 78148. Winners will be announced at the County Hunters Convention and in the MARAC Newsletter. (Include a large SASE for copies).

So there are a couple of quite interesting and different events for you to try your hand at. I know that I always get a thrill from contacts with mobile stations and particularly so when I am operating mobile myself.

Speaking of being out mobile or portable provide an opening for a short comment on the John Moyle Memorial Field Day Contest, held just before the preparation of these notes. Here in VK5, the weather was really ideal for such an event. So there are a couple of quite interesting and different events for you to try your hand at. I know that I always get a thrill from contacts with mobile stations and particularly so when I am operating mobile myself.

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VK NOVICE CONTEST 1986 — Rules

Contest Period — From 0800 UTC, 21st June 1986 to 0759 UTC, 22nd June 1986.

Objectives — To encourage contest operation of amateur radio stations in Australia, New Zealand and Papua New Guinea, with special emphasis on contacts with novice and radio club stations.

Station Eligibility — Only stations in VK, ZL and P2 call areas may enter. No stations outside these areas are permitted to be worked or entered in a log for the purposes of this contest. For radio clubs, no multi-operator operating is allowed. Stations in the same call area may contact each other as well as contacting stations in other call areas.

Contest Bands — All operation must be confined to within the novice frequency sub-band allocations in the 10, 15 and 80 metre bands. No phone operation is permitted. For CW operation, the Morse code speed must not exceed 15 wpm. For phone operation call CO NOVICE Contest and for CW operation call CO N

Mode of Operation — Only Phone or CW may be used. In the CW mode, operation must not exceed a speed of ten words per minute. This is to encourage the use of CW only, and to allow improvement in this mode by those operators who do not usually practice same.

Number Exchange — On phone, stations must exchange a serial number comprising RST report followed by three figures on the same basis as described above for a phone contact serial number. Radio club stations must add the letter C following the serial number.

Log Entries — Each log sheet should be laid out such as to provide columns in the order given as follows: Date/Time, Band, Mode, Station Contacted, Serial Number Sent, Serial Number Received, Claimed Score. Total Claimed Score shall be added to the Total Claimed Score column for each page. Each log sheet must also be endorsed at the top VK Novice Contest 1986.

Front Sheet — A front sheet must be attached to each log entered and must carry the following information: Name of Operator, Address, Call Sign, Section Entered, Claimed Score.

Declaration — The Front Sheet must also carry a declaration which states that I hereby certify that I have operated within the rules and spirit of the contest. Each entry must carry the signature of the licensed operator of the station and be dated accordingly. In the case of a club station, the entry must be signed by a responsible officer of the club’s committee or a licenced operator delegated by the committee to do so. In the case of multi-operator stations, the call signs of participating operators must also appear on the front sheet.

Regulations — All stations participating in the contest must be operated within the terms of the station licence and applicable regulations.

Submission of Entries — Logs are to be forwarded to the Federal Contest Manager, c/o Box 1234, GPO, Adelaide, SA. 5001. Envelopes are to be endorsed VK Novice Contest on the front outside. Entries must be posted so as to reach the box number no later than 28th July 1986. Any entries received later than this date may be used as check logs only.

Certificates — Certificates will be awarded to the top scoring entries in each section at the discretion of the Federal Contest Manager and to any other entrant whose meritorious operation has been carried out in the opinion of the Contest Manager.

Trophy — The Keith Howard VK2AKK Trophy will be awarded to the novice entrant with the highest aggregate score from both the Phone and CW Sections of the Contest. This trophy is a perpetual trophy and will be held by the winner until such time as it is awarded to a winner of a subsequent Novice Contest. Should two or more aggregate scores be equal a decision will be based on a count back as to the greater number of novice stations listed in each log entry. Should such a count also be equal, the log containing the greatest number of CW contacts will be preferred. In the event of a further tie, under these rules the log will be placed before a committee which will exercise a vote as to the nearest and most meritorious entry.

Disqualification — The Contest Disqualification Criteria, as published in each August issue of Amateur Radio shall apply. Any station found during the Contest as constantly departing from the generally accepted code of operating ethics, may also be disqualified.

AMATEUR RADIO DIRECTION FINDING CHAMPIONSHIPS

The Savez Radio-Amatera Jugoslovije (Amateur Radio Union of Yugoslavia), an IARU member society invites amateurs to attend the Third World Jubilee ARDF Championships to be held in Sarajevo, Bosnia and Herzegovina, Yugoslavia from 3rd to 7th September 1986.

The championships have been declared as jubilee in order to mark the 25th anniversary of the first international Amateur Radio Direction Finding Competition held in 1961.

It is noted that the host society is also celebrating it 40th anniversary in 1986.

Additional information may be obtained from Savez Radio-Amatera Jugoslovije (SRJ), PO Box 48, 11001 Beograd, Yugoslavia.
The WHS32 is a complete amateur satellite antenna system in a single package. It arrives in one carton, 2200 mm long, 170 mm wide and 150 mm deep, and weighs less than nine kilograms. The system contains a two metre circularly polarised 24 element crossed Yagi on a 4.11 metre boom, a 70 cm circularly polarised 40 element crossed Yagi on a 3.68 metre boom, plus a 1.7 metre by 40 mm diameter fibreglass stacking boom.

Both antennas are of sturdy all-metal (aluminium) construction (25 mm diameter boom and 10 mm diameter elements) with the exception of the weather-resistant plastic box containing the balun and switches mounted at the centre of the four plastic coated folded dipole driven elements.

Each antenna is supplied with the boom split into two parts. Most of the directors are already attached and all that is required is to loosen the stainless steel wing-nuts on each element and rotate it through 90 degrees and retighten. Then the remaining four directors, two reflectors, and two driven elements need to be added (NOTE: all elements are clearly colour-coded for correct positioning on the boom). Another two bolts with wing-nuts join the two sections of the boom together and the antennas are ready for mounting on the fibreglass stacking boom using the clamps provided on the boom of each antenna.

The final stage of assembly is to attach the coaxial cable to the N-type connector on the phasing harness for each antenna and seal the connectors with the self-bonding waterproof tape that is provided and to connect the 12 volt cable to the two switcher boxes. The whole assembly process should take less than half-an-hour from start to finish.

The end result is a comparatively compact and tidy Mode B or Mode J satellite antenna system with switchable left and right hand circular polarisation with excellent performance characteristics. The gain figures are conservatively quoted as 10-12 dB on two metres and 12.5-13.4 dB on 70 cm, with respective beamwidths of 33-35 degrees and 27-29 degrees.

When put to the test at this QTH on OSCAR-10, Mode B, both antennas noticeably out-performed my existing antenna system which comprises a 2M-14C on two metres and a 435-18C on 70 cm, with quoted gain figures of 11 dBC and 12 dBC respectively.

For the amateur satellite enthusiast the WHS32 offers the ultimate in Japanese ingenuity in the adaptation of a well-proven satellite antenna design at a competitive price.

Further information may be obtained from Sonique Pty Ltd, 112 James Street, Templestowe, Vic. 3106. Phone (03) 848 3032 or ZZV Antenna Farm, PO Box 160, Cardiff, NSW. 2285. Phone (049) 54 6688.
The following new DXCC members both have a score of 101.

Call Sign  Date  Phone  CW  RTTY  Open
--- -----   ----   ----   ----   ----
VK1ZL  29.7.65  85  181 [184(30)]
VK2AAC  15.8.65  85(4)  164(5)
VK2AVZ  28.8.64  284  228  224  220  [254(49)]
VK3BD  22.8.64  226  220(4)
VK2DPN  12.1.65  244  244  244  244
VK2DUIW  6.12.65  150  150  150  150
VK2PU  10.7.65  183  [192(1)]
VK2S9  20.12.65  183
VK3AKK  12.1.65  118  [198(1)]
VK5SPS  27.1.66  112  112
VK3YDL  20.2.65  202  202  202  202
VK3SBG  29.8.65  224  224  224  224
VK3WO  14.8.64  184(4)  204(18)
VK4AIX  19.4.65  165  165  165  165
VK4KS  18.1.66  124(9)
VK4OM  27.2.65  196
VK5AXQ  29.4.66  112  112  112  112
VK5CDY  19.2.65  254(3)  254(3)
VK5DAH  30.7.65  116  116  116  116
VK5LC  5.3.66  264(11)  264(11)
VK5PS  19.2.65  200  200  200  200
VK6OU  9.6.65  186  186  186  186
VK6RU  1.6.65  269(42)
VK8YF  20.6.64  181
VK7BC  11.7.65  190(6)

Awards Issued Recently

WORKED ALL STATES (VHF) all 144 MHz

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<td>VK7BC</td>
<td>11.7.65</td>
<td>190(6)</td>
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Frankfort & Mornington Peninsula ARC 10th Anniversary Award

1986 marks the 10th Anniversary of the Frankfort and Mornington Peninsula Amateur Radio Club and to commemorate the occasion, a special award is being offered to all licenced amateurs.

To qualify for the Award, 10 FAMPCAR members should have worked during the 12 month period between 27th February 1986 and 27th February 1987. Alternatively, the Club Bulletin VK3BHU#13 should be posted between 1st or 15th May 1986 for a single qualifying contact.

Contacts may be made after the Club net which begins at 1000 UTC on Wednesday evenings.

3.570 MHz 2 GRM. Watch for the Club Station, VK3BHU.

The cost of the Award is $33 or equivalent and contact/heard should be sent, together with log extracts to: The Awards Manager, PO Box 38, Frankfort, Vic. 3199.

For a list of Club Members send a SASE to the above address.

BARTG Awards

Quarter Century Award

The Quarter Century Award is issued by the British Amateur Radio Teleprinter Group (BARTG) on the submission of satisfactory proof of two-way RTTY communication with 25 different countries.

The Award is also available to SWLs on a heard basis.

Measuring 25.5 x 33 cm and printed in Red, Green and Black, the Certificate makes an attractive addition to the wall of any amateur radio shack. Endorsement stickers are available for each additional 25 countries up to a total of 200.

For Application for the Award may be made by any of the following methods.

Submission of QSL cards for the countries being claimed. These cards are returned after checking. Alternatively, submission of photocopies or photos of these QSL cards is acceptable (and preferred). Such copies should clearly show both call signs and should establish beyond doubt that the DX contact was made on two-way RTTY.

Claims will also be accepted based on a contest list containing call signs of stations worked, date, time of contact and band used. This list (and the QSL cards) are to be scrutinised by two officers of a recognised radio club or a national radio society. The signed check list and any fees are all that is required under this method.

Claims can also be accepted based on a contest log submitted for any RTTY contest sponsored by the BARTG. The claim should be made at the same time as the contest log is submitted.

NOTE: For the purpose of establishing Country Status, the ARRL DX Countries List is the standard reference in order to maintain compatibility with other groups with which BARTG may have reciprocal arrangements.

The cost of the Award is $53 or 15 recent IRCs. Cost of extra stickers is three recent IRCs, whichever is applicable.

Applications must be received before 20th September 1987. The Awards Manager will make a random selection from this list and will accept claims which are returned with the Award.

For applications, a sample list will be sent to all applicants.

Claims can also be accepted based on a contest log submitted for any VHF/UHF RTTY Contest sponsored by the BARTG. The claim for the Award should be made at the same time as the contest log is submitted.

Cost of the Award will depend on postal rates in force at the time, but a quotation is available on request.

Claims should be posted to Ted Double GBCDW as above.

This information has been kindly supplied by Jim Swan VK3BSQ.
## OSCAR-10 APOGEES M A Y 1986

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### NOTES OF SATELLITE ACTIVITY

1. STS-61C was launched from Kennedy Space Centre utilizing Shuttle Vehicle Columbia. Orbital elements were apogee 350 km, perigee 327 km, inclination 28.5° and period 91.3 minutes. On board were R L Gibson, C F Bolden, F R Chang-Diaz, G D Nelson, S A Hawley, R J Cenker and C W Nelson.

2. Satcom KU-1 had elements apogee 35488 km, perigee 348 km, inclination 27.0° and period 628.4 minutes.

### NOTES OF SATELLITE ACTIVITY

Unfortunately, due to unforeseen circumstances, AMSAT notes did not arrive in time for publication this month. Therefore there will be a double issue next month.

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2. Satcom KU-1 had elements apogee 35488 km, perigee 348 km, inclination 27.0° and period 628.4 minutes.

### RETURNS

During the period 39 objects decayed, including the following satellites:

- **1982-115A** Cosmos 1343
- **1985-120A** Cosmos 1713
- **1986-001A** Cosmos 1715
- **1986-003A** STS-61C

### NOTES OF SATELLITE ACTIVITY

Participants stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

Unfortunately, due to unforeseen circumstances, AMSAT notes did not arrive in time for publication this month. Therefore there will be a double issue next month.

### NOTES OF SATELLITE ACTIVITY

1. STS-61C was launched from Kennedy Space Centre utilizing Shuttle Vehicle Columbia. Orbital elements were apogee 350 km, perigee 327 km, inclination 28.5° and period 91.3 minutes. On board were R L Gibson, C F Bolden, F R Chang-Diaz, G D Nelson, S A Hawley, R J Cenker and C W Nelson.

2. Satcom KU-1 had elements apogee 35488 km, perigee 348 km, inclination 27.0° and period 628.4 minutes.

### RETURNS

During the period 39 objects decayed, including the following satellites:

- **1982-115A** Cosmos 1423
- **1985-120A** Cosmos 1713
- **1986-001A** Cosmos 1715
- **1986-003A** STS-61C
OSCAR-10 APOGEES JUNE 1986

SATeLITE CO-ORDINATES SYDNEY ADELAIDE PERTH

DAY ORBIT U.T.C LAT LON AZ EL AZ EL AZ EL

HHMM:SS DEG DEG DEG DEG DEG DEG DEG

1st June 2258 0123:03 -24 255 272 42 282 54 309 75
2nd June 2260 0042:06 -24 246 278 51 292 62 351 80
3rd June 2262 0001:10 -24 236 286 60 307 70 42 77
4th June 2264 2320:12 -23 227 299 68 336 76 65 69
5th June 2266 2239:16 -23 217 322 75 19 76 77 61
6th June 2268 2158:19 -23 208 346 84 71 84 51
7th June 2270 2117:23 -23 199 43 74 66 63 90 43
8th June 2272 2036:25 -23 189 63 66 76 55 94 34
9th June 2274 1955:29 -23 180 75 58 84 46 99 25
10th June 2276 1914:32 -23 170 83 49 90 37 103 17
11th June 2278 1833:36 -23 161 98 40 95 29 107 9
12th June 2279 1813:07 -23 152 103 55 99 23 113 1
13th June 2280 1752:38 -23 152 103 55 99 23 113 1
14th June 2281 1732:10 -23 142 103 55 99 23 113 1
15th June 2282 1711:42 -23 142 103 55 99 23 113 1
16th June 2283 1651:14 -23 137 103 15 99 23 113 1
17th June 2284 1630:45 -23 133 103 15 99 23 113 1
18th June 2285 1610:16 -23 128 103 7 99 23 113 1
19th June 2286 1549:49 -23 123 107 7 113 -2

SATeLITE ACTIVITY FOR PERIOD 8 TO 28 JANUARY 1986.

LAUNCHES.

The following launching announcements have been received:

1986-001A Cosmos 1715 Jan 8 USSR
002A Cosmos 1716 Jan 9 USSR
002B Cosmos 1717 Jan 9 USSR
002C Cosmos 1718 Jan 9 USSR
002D Cosmos 1719 Jan 9 USSR
002E Cosmos 1720 Jan 9 USSR
002F Cosmos 1721 Jan 9 USSR
002G Cosmos 1722 Jan 9 USSR
002H Cosmos 1723 Jan 9 USSR
003A STS-61C Jan 12 USA
003B Satcom KU-1 Jan 12 USA
004A Cosmos 1724 Jan 15 USSR
005A Cosmos 1725 Jan 17 USSR
006A Cosmos 1726 Jan 17 USSR
007A Raduga 18 Jan 17 USSR
008A Cosmos 1727 Jan 23 USSR
009A Cosmos 1728 Jan 28 USSR

FIRST COMPUTER
Charles Babbage is credited with building the first computer. When? In 1833, over 150 years ago.

A university, he avoided mathematics classes, preferring to row a boat on a nearby lake — and think. Yet, in spite of this trucancy, his academic achievements were brilliant. In 1812, at the age of 21, he devised the first wholly automatic calculating machine. Among his other firsts was discosstyle lighting. Subsequently, he was made a Member of the Royal Historical Society.

After 15 years of cogitating how to invent a machine with the ability to produce the answers to complex mathematical problems quickly, Babbage came up with a bulky mechanical contraption of cogs, gears, wheels, etc called the analytic engine. The general opinion of the day was that it almost worked — almost but not quite; however, it was the basis of the first computer.

A progression of this mechanical computer was the development of the punch card system — a method of instant recall of information from files ad other tabulations. Pre-WWII, OOTers may remember it. It is recorded that one of the earliest programmers was Lord Byron’s daughter Augusta, who compiled mathematical programs for Babbage’s projected analytic engine.

Contributed by Alan Shawsmith VK4SS

FIRST ELECTRONIC COMPUTER
Soon after the appearance of the vacuum tube, an attempt was made in the late 1920s to create the first electronic computer capable of accepting simple instructions. The rack and panel monster — weighing a ton — almost filled a large room and contained 10 000 bulky tubes. It was cooled by fans placed in every possible space; even then it overheated. An adjoining room housed the power supplies and a team of several maintenance men and operators was needed to keep it functioning.

Today, thanks to technological progress, ie solid state miniaturisation, multi-bit chips, etc, a computer of infinitely greater capacity can be carried easily in a coat pocket.

Contributed by Alan Shawsmith VK4SS

Coming next month —
Equipment Review of
KDK FM-240
Two-metre FM

AMATEUR RADIO, May 1986 - Page 45
MRS FLORENCE VIOLET McKENZIE OBE
Who was Mrs McKenzie?
This question is often asked by new members to our ranks when they see her name perpetuated, particularly with regard to the Mrs Florence McKenzie CW Trophy awarded annually to the Australian YL operator with the highest CW score in the ALARA Contest.

This beautiful trophy, donated by the Townsville Amateur Radio Club, is a fitting memorial to a lady who contributed so much.

Mrs McKenzie (nee Wallace), had many firsts to her credit, among them the first Australian qualified woman electrical engineer; first licenced YL amateur radio operator with the call sign 2GA, later VK2EV; first woman member of the WIA.

Her main claim to fame, however, came during World War II, when she was responsible for training thousands of service men and women in telegraphy and communication skills. She also played a major role in the formation of the Women’s Emergency Signalling Corps.

For her services, she was awarded the Order of the British Empire (OBE) after the war. The following remembrances of Vi Wallace (Mrs McKenzie), were received from a VK2 OM, and give some interesting recollections of a truly remarkable lady, who was an inspiration to us all.

VALE VI WALLACE

Many amateurs fondly remember Mrs McKenzie, with memories going back to World War II. Some knew her because she conducted Morse Schools and some remember her radio store, in a little arcade. Seeing her in a nursing home a few months before her death caused a lump to rise in my throat, for I had not seen her since the war. At that time, as a budding blue-lump to rise in my throat, for I had not seen her since the war. At that time, as a budding blue.

Vi clambered over and under roofs to install electrical wiring. Granddad did all his trades in one move, and Vi Wallace, the licenced electrician, was a friend of the family. In particular, she was a friend of Aunt McKenzie, with memories going back to World War II, when she was responsible for training thousands of service men and women in telegraphy and communication skills. She also played a major role in the formation of the Women’s Emergency Signalling Corps.

In spite of many visits to the shop, Vi was unable to assist in eliminating the unfortunate squeals from afar when someone was tuning in his regenerative receiver. Some listeners derived malicious satisfaction in jumping up and furiously twisting their own tuning knob back and forth.

We often remember people from that last photograph — that last meeting. But age is not kind and most wish to be remembered as bright, energetic — eternal youth.

My first recollection of Vi was through the eyes of a six-year-old, way back in about 1924 — I cannot remember precisely. Those were exciting years of radio, when my own father, although not an amateur, made home-brew receivers. I assisted him in holding down wire so that he could wind honeycombs in indiums and large tuning coils surmounted by crystal and catwhiskers.

Probably because of his fondness for oysters, he constructed batteries (with my assistance) out of oyster bottles, cutting glass dividers, moulding plates, applying lead peroxide and adding the acid. After that, the battery was connected to an eliminator (Trickle charger?) and we were in business.

I remember visiting Vi’s shop with him in the arcade on occasions when she explained a circuit in layman’s terms. Very little theory was discussed beyond where to solder the wires.

In spite of many visits to the shop, Vi was unable to assist in eliminating the unfortunate squeals from afar when someone was tuning in his regenerative receiver. Some listeners derived malicious satisfaction in jumping up and furiously twisting their own tuning knob back and forth.

We often remember people from that last photograph — that last meeting. But age is not kind and most wish to be remembered as bright, energetic — eternal youth.

SILENT KEY
On a sad note, we were all saddened to hear that Hisako JUIQL, has become a Silent Key. Hisako was an ALARA member, sponsored by Wendy VK4BSQ, and passed away suddenly on 5th February. Our condolences to her husband Sadao, daughter Hiroki and son Kentaro.

Thanks to Bill VK2NXT, for this information.

That is all for this month. See you next time — 73/33 Joy.

Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic. 3199.

To start with, I would like to thank those who have responded to the requests for opinions about examination matters, published in February AR. A pleasing number of letters was received, and other opinions were delivered personally or on-air.

To summarise so far:

Question 1 — about the relative standards of NAOCP and AOCP theory examinations. Only a few letters were received from candidates who attempted both levels on the same day, but these generally were satisfied with the standards, and the difference in level between the two.

I do not yet have the results of DOC’s investigations, but have heard of only one case where a candidate passed AOCP and failed NAOCP.

Question 2 — opinions about the term Novice. Only a few respondents felt that the term Novice is derogatory. Many commented that it is an accurate description of most operators for their early days on-air, but some were hesitant in applying the term to older, more experienced operators when they themselves were newcomers. Several suggested the use of Class 1, Class 2, etc as an alternative. One correspondent took more exception to Full Licence.

Question 3 — ideas about a single paper with different pass levels. This question caused most comment, as it has on most occasions when it has been raised. There were nearly as many suggestions about how to handle it as comments on the idea, but the general opinion is in favour, because of the recent increase in examination fees.

This suggestion has been around for some years, but so far no simple and efficient mechanism has been proposed. The difficulty is again with the standards and balance of levels.

By the time you read this, our Study Guide for the Novice Course, will be available, or very nearly so. I will be interested to receive comments at any time, but especially from those who use it as the basis for a class or course. Please take the time to jot down any ideas that arise on each section, and send them to me, so that we can reassess it at the end of a year of use.

Best wishes to all those sitting for any examinations this month.
73 — Brenda VK3KT.
Radio Amateur Old Timers Club

REPORT OF RAOTC DINNER

The Radio Old Timers Club held its dinner and Annual General Meeting at the City and Overseas Club, on 6th March. It was a very hot day for Melbourne, over 40 deg C or 100 deg F.

Members decided, despite the air-conditioning, to remove coats and jackets and the dinner was underway.

Max Hull VK3ZS, was Master of Ceremonies to the 61 members present. Apologies were received from Roy Perry VK30U; Murray Clyne VK3HZ; Ivan Hodder VK3RH; John Fullager VK3AVY; Peter Thornley VK3LC; Len O'Regan VK3; Lloyd White VK7G; Charles Nelson VK3WC; Ron Higginbotham VK3RH; and Arch Woolnough VK3BW.

With the advent of television, it was possible to transmit both pictures and sound. The BBC, by 1929, was using a 405-line system. The Nipkow disc, with its scanning holes and the use of the photo-electric cell, was primitive but very useful. The use of the new radio valves would increase the speed of transmission. In the 1920s, still photographs were being made with television in that country and the first television transmitters were being set up. There were demonstrations of the new type of television transmitters and receivers back to Australia when he returned.

In 1927, McDonald floated a company in Melbourne called Television and Radio Laboratories Pty Ltd, about the same time as John Logie Baird was forming his company in Britain. Both used Nipkow discs for transmission and reception.

In 1928, McDonald hired, as his chief engineer, Gilbert Myles VK3KQ, pioneer of amateur radio, who later held the call sign VK2KI. Gil was responsible for the electric and electronic design of the equipment, both transmitters and receivers. On 10th January 1929, they commenced broadcasting 4.5 MW on channel 50 using a 200 ton mast or tower. A young Australian, Donald McDonald was one of 3AR's first engineers and in 1926 was sent to America on a fact-finding tour, investigating the latest developments in radio. Upon his return, he began experimenting with television because he believed that the technique was not very advanced. He brought pieces of equipment, circuits and ideas about the construction of television transmitters and receivers back to Australia when he returned.

In the end, it was decided that talks about television in that country were not very advanced. The Baird 30-line system was used in Australia, in the early 30s, most of the local experimental transmissions were made by enthusiasts, amateurs and the PMG allocated a channel on 2.200 MHz for this purpose.

Baird spent almost a year in Australia in 1938, as a guest of the IRE during the World Radio Conference. He brought with him a large amount of television equipment of the high definition type, including receivers using cathode ray tubes. Most of the terrors of the period were high definition television transmitters and receivers.

The era of mechanical television was fading fast.

Is there any use for mechanical television now? Chris thinks that there certainly is. In response to an article in Wireless World in 1972, several like-minded experimenters began working on television using electrical means.

Would you believe that these were very clever ideas for their time? The most important way that radio and television were used in this period was for news and entertainment.

In the 1920s, Logie Baird was forming his company in Britain. As the Baird 30-line system was used in Australia, in the early 30s, most of the local experimental transmissions were made by enthusiasts, amateurs and the PMG allocated a channel on 2.200 MHz for this purpose.

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Many of the IRE members were enthusiasts and amateurs and the PMG allocated a channel on 2.200 MHz for this purpose.
FREQUENCY LISTS FOR SWLs

Two new publications, designed to provide the SWL with all those unknown frequencies at their fingertips, are now available.

The first is by well-known German author Klingenau. Guide to Utility Stations is a soft bound book containing 465 pages of frequency users, their operating schedules, modes of operation (SSB, RTTY, FEC, ARQ, FA) over a frequency range of 0 to 150 kHz and 1.6 to 30 MHz.

An added bonus to the purchaser of Guide to Utility Stations is the 12th edition of Guide to RTTY Stations. The combination lists over 1500 frequency users including, amongst others 80 RTTY Press Services, along with 502 of their frequencies. As a further bonus, three large fold-out maps show various areas and the frequencies used within them, by the Aeronautical Services over different parts of the globe.

Guide to Utility Stations is available from GFS Electronic Imports for $45 plus $5 postage and packaging — catalogue no UG-86.

A R Showcase

large LED numeric display indicates device type and programming algorithm employed. Naturally a checksum is also displayed. For devices with automatic identification capability setting up is done automatically.

The SE-4948 automatically programs 10 devices simultaneously and has extensive checking features to allow even a relatively unskilled operator to use the machine without danger of damaging costly devices. The SE-4948 already has approval numbers from several semiconductor manufacturers.

For further information contact Alfatron on telephone (03) 758 9000.

AMATEUR RADIO TOUR

The Israel Radio Amateur Club invites amateurs to participate in a 10 day tour of Israel. Special highlights of the tour will be transmitting from the Holy City and the Dead Sea, the lowest point on earth, meeting with Israeli radio amateurs, and participating in a tree-planting ceremony at the Silent Key Forest. Licenses will be provided free of charge by the Ministry of Communication to all licensed amateurs of general class and upward.

The tour is from 5th to 14th July 1986. Further information about this tour, or future tours may be obtained from Zvi Gelfand, Managing Director, Ortra Ltd, 2 Kaufman Street, PO Box 50432, Tel-Aviv 61 500. Mr Gelfand would be happy to plan an itinerary for a group or organisation to take a similar tour should the above not suit the requirements of participants.

INTELLIGENT GANG PROGRAMMER

Similar to the SE-4948 intelligent portable programmer, the new SE-4948 intelligent gang programmer from Alfatron sets new standards in the high speed production of programmed PROM devices. Featuring the new authorised algorithms, programming times are reduced to at least a quarter of the conventional method and in most cases much more.

PROM devices from 16 kbits to 512 kbits are supported. Most popular EEPROMs are also covered. Programming voltages are determined according to the device type and may vary between five volts up to 25 volts as required. A

TESTS OF ELECTRONIC COMPONENTS

Climatic tests are used to improve the quality and reliability of electronic components and assemblies. Qualifying test determine the suitability of a component for a given application. A qualifying test comprises three phases — characterisation, environmental testing and detecting premature failures and determining failure rate.

Environmental testing methods employed in the second and third stages are often the same, however, the object in the second phase is different from that in the third.

Whilst electronic components are destructively tested to the limits of their servicability in the second phase, they are only tested within permissible limits in the third phase so that premature failure can be detected.

Testing methods are high temperature storage, burn-in, temperature cycling and humidity testing.

High temperature storage is a test performed with passive test specimens and is part of a pretreatment to stabilise the electrical and mechanical parameters. It is compared to malfunctioning in metallurgy.

Temperature storage of up to +200 degrees Celsius is used. The success of this test in detecting premature failures is minimal (5-10 percent) but it is relatively high in the case of EPROMS.

Burn-in combines high temperature storage and electrical operation of the components with the objective of accelerating the occurrence of premature failure. About 50-70 percent of potential premature failures are induced by burn-in. Burn-in is carried out primarily in the temperature range between +125+150 degrees Celsius. Oxidation can occur on the contact pins at this heat and have a detrimental effect on the solderability of the component.

Temperature cycling demotes tests in which the specimens are subjected to rapid changes of ambient air temperature in the order of at least 50 degrees Celsius per minute. Although the test is thermal, the effects on the structure of the components are mechanical. Different thermal conductivities and coefficients of expansion of the materials used produce mechanical stresses which destroy weak points in the structure.

Most commonly used test chambers have two different compartments with a cradle lift system which exerts the test specimen, to be transferred directly from a hot compartment to a cold one.

The liquid thermal shock test is particularly severe. The test specimen is immersed alternately in cold and hot liquids, and is used mainly for semi-conductor components.

Humidity tests under steady-state conditions are destructive and are only in qualifying tests.

The diffusion of water vapour through the plastic materials of housings is a process which causes internal corrosion and thus limits the useful life of integrated circuits.

The 85/85 test is a comparative test for identical types of components. High humidity, combined with high air temperature (+85 degrees Celsius/ 85 percent relative humidity), ensures a high diffusion rate. The test is usually performed with active test specimens. Testing time is measured in which the percentage of a batch fails and any results are used as reference values for the quality of the plastic housing and the passivation process.

Compared with the failure rate of other components, the failure rate of semi-conductors is not significant. However, the situation is different in the case of highly complex assemblies. A 100 percent test on electronic assemblies, including trouble shooting and repair, is extremely expensive. As a result, a combination of pretreatment and random testing of assemblies is becoming necessary.

Condensed from Electronics News — February 1986
At the time of my stay on Morotai island, there were an estimated 10,000 troops there, Americans, Indians and Australians. Prior to when the Australian Army Amenity's Medium Wave Broadcaster, 9AD, came on air there had been no broadcast stations. The main one was WVTL, a station which was constructed mostly of junk parts by Australian and American signalers, and operated by a unit called the 96th American Division Signal Unit.

**BROADCAST LIVE**

WVTL often relayed news from Radio Australia for the Australians, and San Francisco KGEI (there was no Voice of America then) for the Americans. There was always trouble with the WVTL transmitters, they always consisted only of announcer's voice and songs. There were no voice-over ads, and sometimes the announcer's voice was played back to the soldiers. At the time of my stay on Morotai Island, there were several other broadcast stations. The main one was a shipborne broadcaster that was in the Salvation Army Officers Club. We had the use of about half of the room when I had anything resembling a "scoop". When I was present on Morotai when our prisoners returned to their homeland, the ceremonies involved a broadcast from the Bio Box, in all the news of the day was given. (My friend Darcy was later drowned at sea).

One day, I was asked to be present at one of the war trials to represent our unit. The defendant had killed many unidentified allied POWs on a nearby island. He had asked why he was there because he had told his superior officer that he was not a soldier of his army. I then decided that as a soldier of his army he was supposed to obey his superior officer without question. However, I was of the opinion that if they were part of my stay on Morotai and war is tough, I can only write the story as I saw it.

I was present on Morotai when our prisoners were released from a Japanese prisoner of war camp. Many were brought to Morotai where they received medical treatment before returning to Australia. Many were skin and bone and I shall never forget the sight of them - mere skeletons.

Before joining the Broadcasting Unit, 9AD, I was at the camp where we had established after landing on Morotai (see a previous Listening Around).

My mate was a chap named Darcy Tanner, and I had worked with him on the staff of the Sydney Daily Telegraph prior to joining the Army. Darcy and I decided what the camp needed was a news sheet, and we were employed by a newspaper, we decided to do something about it.

**OUR OWN LITTLE NEWSPAPER**

I had a typewriter but we had no paper and where else better to get supplies but our former employer in Sydney, the Sydney Daily Telegraph. We therefore put out a billet-heads throughout the camp. Also, as I had to install the camp's amplifying system, I was given permission to use the system from the Orderly Room when I had anything resembling a "scoop" from an overseas source.

**IN TROUBLE FOR THAT**

One day, as I was listening to San Francisco KGEI, I heard a broadcaster speaking from Paris stating that the French people do not know of the surrender in Europe. What surrender, I thought as we were in the middle of World War II. But the news came to hand that the Germans in Europe had surrendered. The end of the war in Europe had come.

I told them to be sure to attend one of the American Army's film shows that night. These shows were always well attended and the main feature was a broadcast from the Bio Box, in all the news of the day was given. (My friend Darcy was later drowned at sea).

After leaving 9AD, I joined an army newspaper unit called Table Tops. This paper had earlier been formed in Queensland. My job with this unit was similar to the one in 9AD, except we had to join in the Broadcasting Unit. At Table Tops I had the use of about half-a-dozen receiving sets, each of which was usually used to monitor stations like the BBC, KGEI, or other broadcast world news. My assignment was to read them from an overseas source. Not being able to write shorthand, I was confined to making rough notes of what I heard and copying anything I heard in CW from world newsagencies. There were also two shorthand reporters who had a Number 11 set on which they could listen to the main news broadcasts.

From the hut where I listened I could see the giant screen of the Australian Army's Boomerang theatre where thousands of troops, each equipped with his own water bottle, ground sheet and box to sit on, watched the show. I had sought and obtained permission to erect a simple telephone between the giant loudspeaker at the back of the screen, a battery and headphones so I could hear the sound of the film from my listening post.

**OUT OF ORDER**

Now let me tell you, completely out of chronological order (as my close friends know, I am not of a methodical nature), about some of the incidents concerning the Boomerang theatre. While I was still at 9AD, we were friends with three Indonesian natives who were employed mainly to wash our clothes. They had a tent just outside our area with a loudspeaker especially installed for them by the 9AD technicians. This was connected to a dual-wave radio so they could hear Indonesian dance music and news broadcasts from Radio Australia in Indonesian.

The three Indonesians were 17, 16 and 11 years of age, and it was often our custom to take them along to the Boomerang theatre, a treat which they enjoyed very much. It was, however, frustrating for the troops to get there so we used to dress them up in pieces of Australian Army uniforms and smuggle them in, warning them not to speak. If they spoke they could be immediately recognised and placed in Military Police custody and get us into trouble as well.

**KICK IN THE SEAT**

We escaped detection many times but one night, when I asked the 16 year old if he would like to go to the show he expressed great fear. As he was usually very eager to go I was puzzled by his sudden unwillingness. It eventuated that, one night when I was on duty, he decided to go to the theatre by himself. Perchance, a military policeman saw him, caught him and gave him a verbal thrashing as well as a swift kick in the seat. And as it happened that the next time he was caught it would be goal.

Another time, Gracie Fields (The Biggest Aspidestra in the World) and her husband came to visit the troops. While I was still at 9AD, there were thousands there to greet her. In fact, there were so many there that many had to position themselves on the roof of the toilet block. During the concert, we got so excited that they fell through the roof.

The Army Amenities Station had rigged up a special land-line to relay Gracie's performance to the rest of the island. I don't know how many people there were never heard of this town, but it may have been in our area. There were many Australian units there, even the Ninth Division after it had returned from Europe. Whilst there was only one main road running the length of the island, the location of each unit had been given names such as Canterbury, Moonee Ponds, Bondi or even perhaps, Dandenong. They were names which reminded the troops of their homeland - the home they had come to Morotai to defend.

These suburban place names were all interconnected by Army field telephones, tram lines and exchanges, so if you wanted to make a call from one unit to another, it was often necessary to plough your way through several switchboards before you got to the wanted party. It was a typical story, but it was a familiar one.

The most-used telephone was the ever-faithful "Don Five", which could be called by magnetic or bell, although its calling device was a small Morse key.

**INKY BLACKNESS PENETRATED BY BEAMS OF LIGHT**

Large numbers of Australian troops were camped on the peninsula, and were there when some zeros came over dropping bombs. I think the most terrifying part of being on the ground during a bomb-raid is the minutes before the enemy comes overhead. First news of an impending raid was given by the coast watch radar, then up go the red sirens. I recall one night when I was on the peninsula. It was around midnight and we were awakened by the screaming sirens. I arose from my bunk and went to the Orderly Room where thousands of troops, each equipped with his own water bottle, ground sheet and box to sit on, watched the show. I had sought and obtained permission to erect a simple telephone between the giant loudspeaker at the back of the screen, a battery and headphones so I could hear the sound of the film from my listening post.

Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

AMATEUR RADIO. May 1986 - Page 49
INVASION HAD COMMENCED AND WE WERE SURROUNDED

We were well rehearsed in invasion procedures for it was believed that the enemy would attempt to invade us from the sea. Hundreds of servicemen were watching a film at the Boomerang theatre one night when suddenly the film stopped and the powerful light, which was used during interval, was switched on. No announcement was made but we could hear the sound of distant gunfire. Rumour quickly spread through the crowd that the invasion had commenced and we were surrounded.

In the blind panic that followed, soldiers began to run in all directions. In my own panic, I ran through a bushy area headed for the "invasion assembly point" of my own unit. In my hurry in the darkness I fell over a log of wood and was trampled on by half a dozen other soldiers all heading somewhere in a hurry.

Upon arriving at the assembly point we discovered the scare was a false-alarm as news had been received by radio that the enemy wanted to end the war and as the crews manning the coastal guns had been the first to receive the message the gun fire we had heard was from their guns, fired in sheer joy at the thought of the end of the war.

TORPEDOED BY A SUBMARINE

Whilst on duty in my radio hut at Table Tops I received a distress message from a Catalina Flying boat which had landed somewhere in the China Sea. The call was made using CW, giving a fix in latitude and longitude, and identifying call letters. I wrote the message down, then not knowing exactly what to do about it, went to the tent of my editor. It was about midnight so of course I had to extract him out of bed. His experience was strictly journalistic and he was not into the mysteries of electronics. He inquired if I had replied to the message but I reminded him that we had no transmitting equipment. This was the reason I had referred the matter to him in the first place as he was my senior officer, and as such should know what to do about it.

The last I knew of the matter was that he had telephoned the message to the RAAF. Maybe I had doubled up with the HAFF's own monitors but nevertheless I did what I thought was best in the circumstances.

This was the second distress message I had intercepted — the other being from an American passenger vessel which had been torpedoed by a submarine in the Pacific.

I am now nearing the end of my stories from Morotai Island, I hope they have been of interest.

73 from Joe VK2BY.

Well, Winter has arrived, and although I am writing this in mid-March, I have been able to determine that there has been an ever-so-slight improvement in propagation. True, there have been more pronounced drop-outs on HF yet I think we may have possibly turned the corner as far as the current cycle is concerned. Propagation on the higher frequencies, such as the 13 and 16 metre broadcasting allocations, has dropped off as expected. The 19 metre band also closes much earlier in the local evening-hours, although there are quite a number of interesting signals in the local daytime-hours.

EUROPEANS EARLIER

The change of season also means that we will hear many European signals coming through much earlier, from 0200 UTC, particularly on the lower frequencies, such as the 31 and 49 metre bands. Interestingly, some of these signals on 49 metres are coming across Antarctica or pretty close to it around that time. This has been noticed by many experienced DXers and SWLers for some time. This is especially noticeable on signals from the UK and Central Europe. As well, the AFRTS station at Morotai, which is under the command of the US Navy, has also been detected, usually with an Auroral flutter on the carrier.

Later on, say about 0300 UTC, the propagation improves across Central and South America. There are some relay stations of the BBC and Deutsche Welle in the Caribbean, as well as Radio Netherlands/TWR in Bonaire, who put in very good signals.

TARGET TO CHILE

In the winter months, broadcasts that are targeted to the Americas from Europe are audible here, particularly around mid-day EAST. One station in particular can be easily noted. The station broadcasts in Spanish and is on a number of channels simultaneously. Not surprisingly, it is Radio Moscow. There are two separate programs — one is specifically targeted to Chile. It sometimes is using another call, so do not get confused and identify it as being in Latin America. Besides being on a number of channels simultaneously, the senders periodically switch programs to RM's Latin American Service.

THE END FOR LYNDHURST

A piece of radio history in Australia recently came to an end. Radio Australia ceased using the Lyndhurst site, which has carried programming for Radio Australia to the South Pacific for over 30 years. The Shepparton site has commenced using all the frequencies previously occupied by Lyndhurst for RA. The primary reason that this change has been made is that the senders were getting old and obsolete, and were unable to compete with their puny 10 kW. Naturally, most SW senders are in the region of hundreds of kilowatts, so the signals were not as effective. The Lyndhurst site is continuing to be operational with the ABC Inland Service from VLR and VLH, with relays of Domestic programming. The Standard Time and Frequency Station, VNG, will also continue, yet the Lyndhurst site will be closing shortly. No decision has yet been made where VNG is likely to be re-located, but it could also be sited at Shepparton. The Domestic HF Service will probably be re-evaluated.

NEW SERVICES HEARD

And while we are on Australian HF Services — the ABC Northern Territory HF Service from Alice Springs, VLBA, comes into Launcest very well, particularly in the evening-hours, on 2.310 MHz. The other senders, VKBK and VL8T at Katherine and Tennant Creek respectively, will become operational in the near future. They will all carry the same program from the ABC Northern Territory Service in Darwin. As well, the service carries programming in various aboriginal dialects prepared by the Central Aboriginal Media Association and is separate from the ABC, from time-to-time. QSLs are available on ABC programming and not on CAMA produced programming.

Incidentally, the operational times for VL8A are 1900 to 2230 on 2.310 MHz; 2230 until 0730 on 4.835 MHz and 0730 until 1430 on 2.310 MHz. A report that the service will be a 24-hour service on Fridays is incorrect, judging by monitoring here. When information becomes available on the frequencies and time for Katherine, they will be passed on in this column.

The Radio Australia program Talkback is now aired at 0310 and 1610 on Saturdays, and 0530, 0910, 1230 and 2040 on Sundays. Do not forget that a new broadcasting period commences on Sunday, 4th May at 0100 UTC. Until then, the best of listening and 73 — Robin VK7RH.
This month, I have a strange coincidence, or two, to report. I received a letter from Tony VK1SG, who told me of some comments he had made in response to the Amateur Radio Questionnaire in December 1984, regarding publication in Pounding Brass of a list of time and frequencies for VIX and the other maritime broadcast stations for the benefit of those who are looking for good CW to listen to. He had received no acknowledgment, and hadn't seen any publication of the information, so he wrote directly to me. He was also prompted to write after reading the February column on keys and keyers. He has a double-bug, which carries the following inscription: Automorse. Hitchcock Brothers. Makers. KP Thomas, Adelaide. The key has been engraved with the name R S Hemsley.

The first coincidence lies in the fact that the April edition of this column contained a description of the very device — Tom VKSTL says a fellow by the name of Norman Thomas developed (a double-bug) here in Adelaide in the 1920s. The parts were made by Hitchcock Brothers, and Mr Thomas personally set-up and adjusted each one before shipment. Coincidence because this is being written in February!

The second coincidence is this — the evening of the day on which I received Tony's letter, I had a 'phone call from Jenny VKSNW, our Divisional Secretary, who told me she had just received a list of things to do from Bill Rice, the Editor, including a request for that very information originating from a VK1!

I can take a hint. I rang the Coast Radio Service installation at McLaren. It is about 15 miles (24 km) south of here. I have driven by many times because it sits on a hill between a favourite winery and the beach. The staff and manager (Fred Reeve), are very helpful and even offer tours of the facility for something I hope to report on in the near future.

The Coast Radio Service, a division of the Overseas Telecommunications Commission (OTC), provides a variety of maritime communication services, including message handling and weather broadcasts in copper-plate Morse, as well as more modern modes. Anyone wishing to improve their understanding ability is encouraged to monitor the CRS frequencies.

The Editor has been asked to print extracts from the schedules. Copies of the complete guide (including phone frequencies) can be obtained, free of charge, from the OTC or any Coast Radio Station.

For those of you who are struggling to get up to five or 10 words-per-minute, I repeat the advice I have given several times. Listen to traffic well above your capability — even if you only copy an occasional character at first, you will soon find that the odd character becomes the odd word, and before you know it, you will be getting most of the text.

Tony backs me up — "In the event of anyone arguing that these speeds are useless to learners, then I heartily refute that suggestion". When he was studying for his amateur licence over 25-years ago, he had to listen to VIX in Canberra and struggle on. There were no tapes for learners in those days.

The following extract from Tony's letter should be noted:

"If only those empty and rather spiteful critics of CW could face up to the fact that CW can even still get, and be read, where phone never can, and that it is still used for this reason all round the world...

...technology will phase out CW in the end, though, of course, phone will be discarded first. I sometimes think of a world war ending, in disaster everywhere, all the super technology wiped out; no chips, boards, printed circuit boards available. Somewhere there would arise someone, probably an amateur, who could build a simple oscillator and what a pity if he didn't know Morse. If he did, and sent it, what if the man who had contrived a receiver, and heard the signal, himself didn't know Morse! We would have to wait, would three units, both sides managed to make a modulator and a microphone. Would it be AM or SSB? Perhaps they wouldn't be satisfied unless it was stereo..."

"It happens to me that, in the last war, the English brought in amateurs for radar operation, ground and airborne. Hitler had turned all the German amateurs off the air long before the war so their potential was lost..."

"I believe that CW should remain mandatory in the amateur licence requirements even if only because of the possibility that one day the amateur community might be called upon to establish communications from what could be resurrected from the rubble of our civilisation..."

73 till next month, when we will look at poetry and contests..."

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**Intruder Watch**

Bill Martin VK2COP  
FEDERAL INTRUDER WATCH CO-ORDINATOR  
33 Somerville Road, Hornsby Heights, NSW 2077

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**Pat Hawker re Albanian broadcasting.**

It seems that most people, including Pat, thought that Albania was NOT a member of the ITU, which could have been instrumental in helping to supply more ammunition for the Intruder Watch Guns to sink the Intruder Ships who sail into our frequency allocation.

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**Will Any Be Returned?**

There is a WARC 87 currently being planned, to decide the fairer sharing of the present shortwave broadcasting spectrum. I hope the amateurs get their fair share RETAINED!

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**GOOD NEWS FOR IW**

With the re-organisation of the International Amateur Radio Union (IARU) Monitoring System, (See AR December 1985) an International Co-ordinator has been appointed in the person of Bob Knowles ZL1BAD, the former IARU Region III Monitoring System Co-ordinator. Bob did a remarkable job as Regional Co-ordinator, and will certainly make things move as International Co-ordinator.

As mentioned previously, this good news for the IW, as Bob will have access, through the IARU Executive Committee, to the International Frequency Registration Board (IFRB). As a result of the vacancy left by Bob's move to the position of International Co-ordinator, I have been appointed Co-ordinator for IARU Region III. I look forward to now being in an even stronger position with regard to access to information, and hope to be instrumental in helping to supply more ammunition for the Intruder Watch Guns to sink the Intruder Ships who sail into our frequency allocation.

See you all next month, and good DX!

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**Acknowledgments**

Practical Wireless; VK4AXX.

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A listing of Radio Telegraphy Stations of the Coast Radio Service will be published next month.
Special Event Station

On the occasion of the 75th Anniversary of the Royal Australian Navy, an amateur radio station, operated by the local members of RNARS, will be established at HMAS STIRLING on 11th May 1986. The call sign of the station will be VK8/RAN.

For further information, contact Chris Dodd, VK6DV, 3 Liege Street, Woodlands, WA, 6018.

DEIL NEWS from the NORTH WEST

Branch members were thrilled when the Penguin High School, where Branch functions are held, made available a bigger storeroom for storage of equipment such as the base station and RTTY gear.

All repeater modes are well in hand and the next activities night will see the six and two metre aerials underway.

Frank, the Branch News-Co-ordinator advised that the last news broadcast was pre-recorded and sent to the news-reader, ready to go. It was well received.

The President of the Branch is calling for ideas and help to establish a base station at Wynnard High School.

Frank VK7ZFH, was the recipient of the Gong Award for the month. Frank attempted to make contact with VK3 through the repeater but he was talking on simplex and did not get through.

The Horse Trials, held at Westella, just out of Ultimo, was a great success, with 11 operators taking part. Some had two jumps to look after, others had three. The base was set-up at the start and as the horses left they were put on a stop-watch. As the proceeded through the course, their positions were relayed back to base, also the results of each jump, how many clean jumps, how many refusals, etc.

An ambulance had to be called on two occasions, and help was on hand very quickly.

The operators were thanked for a job well-done and their presence at another one being staged shortly was encouraged.

On 20th February, two NW Branch members ventured to Crotty. Crotty is situated in the south-west of the State, which is approached firstly by a bitumen road, then gravel with the final approach being either by four-wheel drive or foot. The intrepid Winston VK7EM and Arthur VK7SE chose to walk.

Crotty was a mining town which closed down around 1900. At that time it had a good railway service to Pillinger and some of the carriages still remain in the bush — one with a large tree growing through it. Arthur and Winston walked down to Kelly Basin along the old railway track.

Contacts were made back to VK7BV, VK7KAB, VK7KC and VK7WZ on 80 metres. The intrepid venturers were using a small home-brewed rig, (built by Winston), a lead-acid battery and a dipole aerial slung over a couple of trees. Reports were 5 x 7/8.

A CW contact was also made, with good copy, on another home-brew transceiver, complete with key and speaker in a Stoppels tin.

The boys must have looked quite a sight, lying on their stomachs in their tent, trying to cope with the rain and understand Morse signals which they had both thought they had forgotten, but the most memorable event of the trip must surely have been when Arthur produced a three layer sponge cake complete with candle to celebrate Winston's birthday.

On the return hike, the boys spoke to VK7PS and listened to the Sunday Morning Broadcast.

Truly a trip to remember.

Contributed by Max Hardstaff VK7KY

AMATEUR RADIO FOR MGGS

An amateur radio station is being established at the Mentone Girls Grammar School by the Science Department as a first step towards the establishment of a Science Club. The Head of the Science Department is a licenced amateur, Paul Butter VK93BP.

Although in its early stages, the school's radio station is already equipped to make contact with the amateur community around Melbourne — using voice and computer communication (RTTY). Coverage will extend to other parts of Australia, as well as overseas, when a suitable antenna can be located. It is also hoped that amateur television will be added to the station when Paul's experiments with reception and transmission bear fruit.

In the long term, a ground station may be established for communicating through the amateur satellites.

Once operational, the girls plan to transmit regular bulletins on VK3RTV to attempt to communicate with other schools and interested parties.

The school is a member of the WIA and hopes to soon be operating under its own call sign.

Would it be the first all-girls school to have an amateur radio station?

Paul is willing to present a regular school radio network column for AR, what do other schools think?

Information supplied by Paul Butter VK93BP

SOUTH EAST RADIO GROUP INC

The South East Radio Group will be holding its popular Annual Convention again in June this year. This is the 22nd convention held by the group and this year has been registered as a Jubilee event.

The convention attracts much interest due to the many interesting trade displays, kindly staged by the various companies involved in the retail of amateur equipment. There are, of course, many of the ever popular competitions. Such events as fox hunts, hidden transmitter hunts and scrambles are available for those interested in competing for excellent prizes and the perpetual trophy. Of course, it should not be forgotten that the renewal of old acquaintances and the meeting of those faces behind the microphone is, to some, the most important part of all.

The convention starts on Saturday, 7th June, with some fox hunts, followed in the evening by the Convention Dinner. The Sunday sees many of the serious competitions and, of course, the new famous Lunch and Tea organised by the hardworking ladies. It really is a must to come along to Mount Gambier on this weekend and join in the fun of this J150 event.

Mount Gambier is situated on the side of an extinct volcano (the Blue Lake), about half-way between Adelaide and Melbourne. There is much to see and do in this lovely city so come and enjoy yourself. Accommodation is normally plentiful, but as the city plays host to many sporting events, etc, on this weekend it is a good idea to book early. For a full program, accommodation guide and any other queries, please write to the SERG Inc. PO Box 1103, Mount Gambier, 5290.

Contributed by David Edwards VK5EF

INTERIM REPORT ON THE SEQTG DUAL 147 MHz REPEATER

To date, the dual repeater facility construction has not been completed, although installation is expected within the next few months.

Since initial conception of the dual repeater system controlled by a shared single microprocessor, the output has taken many turns in view of practical construction and technological constraints.

One major problem which has meant a complete re-write of the system software is the change of micro-processor type. The original system was to have used the Signetics 2650 CPU, but the continuing availability of a disk-based 2650 system capable of being used to implement software/firmware updates is in doubt. A search was made over some months for access to a cross-assembler to allow assembly of the 2650 code, and a substantial effort was put into writing such a cross-assembler, but was eventually discarded because of errors in assembly which could not be corrected.

Recently, a decision was made to implement a Zilog Z80 CPU as the active processor. This of course has meant that the nearly completed 2650 program had to be discarded and only used for program flow. Although the basic dual repeater control software has been completed, the mess-

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allow remote monitoring of the various supplying voltages within the system. It also features its own internal mains power supply with memory battery back-up only.

All inter-connections, except power, between chassis, DB25 series connectors, the only chassis with more than one being the modern chassis which acts as a common identification point.

The diplexer (yet to be re-manufactured from the existing facility) will consist of six resonators in band reject mode, three in each leg. Tests on a new configuration showed that rejection figures per resonator can be appreciably reduced (compared to the same resonators in T shunt mode). Rejection per leg is expected to be greater than 100 dB over the 40 kHz (dual channel) bandwidth. Complete rejection is located on the lower edge of the frequency. The coaxial ring hybrid has been manufactured and provides a minimum of 40 dB transmitter to transmitter (port-port) isolation. Maximum isolation measured was 53 dB, low in the 146 MHz part of the band. A ferrite isolator with a maximum rejection of 64 dB will be installed on one transmitter or the diplexer transmitter feed point, whichever provides the greatest transmitter intermodulation rejection. An additional series bandpass resonator is to be installed on the diplexer board to provide some rejection from other adjacent services, and if required, yet another resonator will be fitted to provide notchting of paging frequencies from the local vicinity.

A new backup battery has yet to be purchased. The completed rack when installed in the Philips Communication Services building at Mount Cotton, will be connected to a 6 dB whip antenna relocated to the top of a large pipe, well above the buildings roof. This should provide unobstructed coverage in all directions. One lone neon operated by PSC to allow this installation is that the finished product must be of a professional standard.

As could be expected, this is not an easy project to carry out, a great many factors have taken considerable time in all phases, the initial planning, the licensing, the physical construction and the software development. And the project is not yet complete. The research costs are high but the value of the end product to the amateur fraternity is of major importance.

Also, the material cost are quite high. The two transceivers (yet to be manufactured) in the new condition with a high price tag. The controller memory is worth about $200 alone. The other hardware, including all licensed RF and UHF channels, radio and codes, etc total up to an amount that would astound the average amateur. Most users do not appreciate the money, time and energy consumed to achieve this.

At this time, installation at Mount Cotton is expected within the next few months.

**MOST EXPENSIVE IN-HOUSE COMMS**

Canberra's new Parliament House, due to be opened in late 1986, will have one of the world's most expensive in-house information and communication systems.

The house monitoring system will be capable of supporting 100 television channels with stereo sound and 100 FM stereo radio stations.

It main task will be to link off-air broadcasts and the proceedings of both chambers to Hansard, the public library and the Member's rooms and public areas.

It is expected that only 55 stereo television channels and 25 FM radio stations will be in use when the building is opened for Australia's Bi-Centenary, but as the building has been designed to last at least 300 years, facilities have been provided for 100 future channels.

The reticulation system for both systems includes 21 km wideband 50-450MHz super low loss coaxial trunk cable, 80 km super charger coaxial drop cable, 40 km coaxial drop cable, 90 taps, 1500 splitters and 80 wideband line amps.

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**DOC ENFORCES THE NEW RADCOMMS ACT**

An unlicensed radio operator, who identified himself as the original wombat, was driving a locomotive around a Sydney railway yards late at night transmitting obscenities.

Stopping his illegal activities was all in a night's work for Department of Communications' radio inspectors. They knew someone was operating on the Amateur Radio Frequency Band without authority at the Enfield marshalling yards, so the inspectors took their VHF monitor and went to track him down. But the signal was moving, and when a locomotive went past the signal peaked.

A look at the Department's records showed that the train driver was licenced to operate on the AM band, not on the VHF amateur radio frequency. The story ended in court. The wombat had $300 worth of equipment confiscated, and was fined $200 plus costs.

But it's not a matter of enforcing licensing laws for the sake of revenue. The radio frequency spectrum is a natural resource. But it is finite. There is only so much room on it and it has to fit a lot of users, from marine distress callers to satellite television broadcasts. Unauthorised use of radio equipment interferes with all sorts of legitimate transmissions: amateur use, broadcast, and much worse, essential services. The Department's job is to protect these transmissions.

In one case recently, a Queensland man made repeated calls on a minimum service facility in marine distress channels, claiming he was with several other people in a boat outside the Southport sandbar. The condition of the bar at the time was dangerous, but he did not say his boat was in trouble, his continued requests for information about the bar, and his failure to acknowledge repeated warnings alarmed the rescue services.

In fact, he was transmitting from his home. As well as losing the equipment (which was borrowed from a friend who also did not have a licence), he was fined $300 plus costs.

Most of these cases were prosecuted under the old Wireless and Telegraphy Act 1905. Late last year, the new Radiocommunications Act came into force, replacing it. Penalties under the new Act are more severe, as another Queensland man found out. He made straightforward hoax distress calls to the Cairns coast guard, and was fined $2500 and $150 for his CB transceiver and a $200 CB transferer confiscated.

In recent cases involving unlicensed operations of CB equipment, the minimum fine imposed by courts is $250. But it is not a matter of enforcing licensing laws for the sake of revenue. The radio frequency spectrum is a natural resource. But it is finite. There is only so much room on it and it has to fit a lot of users, from marine distress callers to satellite television broadcasts. Unauthorised use of radio equipment interferes with all sorts of legitimate transmissions: amateur use, broadcast, and much worse, essential services. The Department's job is to protect these transmissions.

The future looks bleak for wombat.

**VHF COMMS MAGAZINE**

The Publishers of VHF Communications, advises that the final edition for 1985 will be published in January.

They are gradually making up for lost time caused by the unfortunate death of the previous editor.

The publication of only three editions for 1985 had been contemplated and would have caused difficulties with payments. A delayed fourth edition is better than none at all.

The Publishers would like to thank all subscribers for their understanding and sympathy with their problems.
DISPOSALS ITEMS
Periodically, there are Trash and Treasure days held at Amateur Radio House. The Division has items left over from these various events and some of the components are on sale at the Office. Any member who would like a list of components available should send a stamped self-addressed envelope to PO Box 1066, Parramatta, NSW. 2150, for a copy. Left over from the March T & T was an assortment of printed circuit boards for commercial two-way radios. There are also still some 10.700 MHz crystal filters, as advised in a recent AR.

JUNE FIREWORKS
Plans are underway to hold the annual fireworks evening at Dural, during June. Details will be given on the Sunday Broadcasts. An indication of attendance will be sought on the Broadcasts, so please respond when the item is announced.

SUB-COMMITTEES
This is the time of the year when the Division checks out the various sub-committees. By now, the new Council positions will have been determined. The Broadcast has been detailing these various committees and if you are in a position to assist, please contact the Office.

DIVISIONAL ADDRESSES
To avoid any confusion and delay, all items by mail, except QSL cards, should be sent to PO Box 1066, Parramatta, NSW. 2150. The QSL address is PO Box 73, Teralba, NSW. 2284. There is still mail arriving at the old Divisional addresses, even five years after they have been cancelled.

BROADCAST QUESTIONNAIRE
There was a good response to the questionnaire concerning the Divisional Broadcasts, which was distributed earlier this year. At the time these notes were being assembled, the Questionnaire results were being tabulated. The results will be published in a later AR.

REPEATERS
Investigation for an alternative channel for Liverpool continues. They had a pager move in next-door. WICEN 7150 had a failure of the transmit-side earlier this year. Equipment upgrade is currently underway. Armidale District ARC have recently obtained permission to site a 70 cm system on a local hilltop. Summerland ARC are still trying to obtain permission to a site at Byron Bay for a two metre repeater. Illawarra ARC have submitted an application to co-site a packet repeater (7575) with their RAW 6950 service. Assessment forms for repeater applications are available from the Divisional Office.

MARCH 1986 SEMINAR
To mark the end of the VK2 Division’s celebration of the 75th Anniversary Year, a seminar was held on Saturday, 8th March. Included in the proceedings was the closing of the Time Capsule which is intended to be opened in 2010.

The morning speakers at the Seminar were Colin Christiansen VK2BCC/VK0CC, who spoke about his trip, in the latter part of 1965, to Heard Island, as Radio Operator with the scientific party. Roger Harrison VK2ZTB, spoke about his discussion paper, Amateur Radio — Future Direction, which was printed in February 1986 AR.

After lunch, the final material was placed in the Time Capsule by the President, Peter VK2PJ, and the lock was closed by Roger VK2ZTB. It will be interesting to see which of his points from the discussion paper will be in operation when the capsule is opened.

The afternoon lectures were given by Gordon McDonald VK2ZAB, who spoke about Enhanced VHF/UHF Signal Levels due to Aircraft. AR readers will have seen Gordon’s articles in October 1985 and February 1986 issues.

Gordon VK2ZAB, discusses Aircraft Enhancement.

The final lecture for the day was presented by Dr Trevor Bird, from the CSIRO Radiophysics Department. Trevor spoke on antennas for satellite communications.

The three seminars (1984, 85, and 86), were video recorded and copies are now available for loan from the Divisional Office. The format is VHS, either as single copies or two on the one tape. Details are available from the Office during the week, 11am-2pm, on (02) 689 2417, or by writing to the above address.

The Federal Video Tape Library also has copies, available under the conditions outlined by the Coordinator, John VK5KG, in the March edition of Amateur Radio, pages 52 and 53.
The Victorian Council of the WIA would like to welcome the following new members who joined during the month of February:

- John Abrin, W Bradford; David Cain, VK3MXK; Janusz Drzymulski; Phillip Feller; Harold French, VK3ZRM; Mike Hurnell, VK3NNK; Ronald Janson, SWL; Ben Kelford, Phillip McMahon, VK3PU; George McManus; David McQuie, VK3BQ; Peter Maberly-Smith, VK3CFM; Trevor Mitchell, VK3CU; Barry Ridgeway, VK3VBR; Friedhelm Rode, VK3AFR; Pamela Rohniach; Phillip Yeo and Murray Young, SWL.

As only 10 members nominated for council, these members were duly declared elected at the February Annual General Meeting of the Division. At the March Council Meeting, the Council sorted themselves out and various duties were allocated as follows:

- President — David Jerome, VK4YAN
- Senior Vice-President — John Aarsse, VK4QA
- Treasurer — Theo Marks, VK4MU
- Assistant Secretary — Val Rickaby, VK4VR
- WICEN Co-ordinator — Ken Ayres, VK4KD
- WICEN Co-ordinator — Rob Green, VK4KUG

The new address for all correspondence to the VK1 Division is:

GPO Box 600, Canberra, ACT.

As only 10 members nominated for council, these members were duly declared elected at the February Annual General Meeting of the Division. At the March Council Meeting, the Council sorted themselves out and various duties were allocated as follows:

- President — David Jerome, VK4YAN
- Senior Vice-President — John Aarsse, VK4QA
- Treasurer — Theo Marks, VK4MU
- Assistant Secretary — Val Rickaby, VK4VR
- WICEN Co-ordinator — Ken Ayres, VK4KD
- WICEN Co-ordinator — Rob Green, VK4KUG

The new address for all correspondence to the VK1 Division is: GPO Box 600, Canberra, ACT. 2601.

The old Queen Victoria Terrace address will remain for some time until the new address has filtered through internationally.

If you have any difficulty with your equipment or callsign, please contact the Divisional member who would like to present a talk, or like discussed, please contact the Divisional member.

QUEENSLAND DIVISIONAL COUNCIL FOR 1986

As only 10 members nominated for council, these members were duly declared elected at the February Annual General Meeting of the Division. At the March Council Meeting, the Council sorted themselves out and various duties were allocated as follows:

- President — David Jerome, VK4YAN
- Senior Vice-President — John Aarsse, VK4QA
- Treasurer — Theo Marks, VK4MU
- Assistant Secretary — Val Rickaby, VK4VR
- WICEN Co-ordinator — Ken Ayres, VK4KD
- WICEN Co-ordinator — John Aarsse, VK4QA
- Research Officer — Dennis Breitkreuz, VK4KEW
- Club Liaison Officer — Bill Delpleish, VK4JU
- Inwards OSL Manager — Hugh Swan, VK4BHS
- News Editor — Bud Pounsett, VK4QY

The group also held their Annual General Meeting recently. The executive elected to office were:

President — Peter O’Connor, VK4KIP
Secretary — David Brownsey, VK4KAFA
Treasurer — Shaun Connolly, VK4CC
Vice-President — Barry Riddell, VK4ZBJ

In his Annual Report to the Group, the immediate past President, Doug Hunter, VK4ADC, commended the valuable work done by the retiring News Co-ordinator, Rob Green, VK4KUG. He commented on the enormous amount of time and effort that, each week, went into the VK4TTY News Broadcast. This Broadcast has been acclaimed as the best RTTY news in Australia and in recognition of his efforts, Rob was awarded Life Membership of the Group.

 BARCFEST 1986

BARCFest 1986 will be held again this year on the 10th of this month. Dave Prince, VK4KDF, urges those amateurs who will be attending the fest to make it a family affair. The venue is the Indooroopilly State High School, Ward Street, Indooroopilly, from 9am to 4.30pm. There will be lectures, displays (amateur and non-amateur) and home-brew contests and disposals. Parking is no problem and admission is $2 for a family.

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TECHNICAL SYMBOLS

From time to time Amateur Radio magazine and other radio magazines use symbols in technical articles. For example, the capital letter of Omega is used for ohms, lower case lambda is used for wavelength. It is hoped the following article may explain to newcomers what the various symbols mean.

The Greek Alphabet is given for reference, as many Greek letters appear in Technical Texts.

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Prefixes for Multiples and Submultiples of Quantities

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<td>10^0</td>
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Signs for Units Employed after Numerical Values

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<tbody>
<tr>
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<td>Volt</td>
<td>V</td>
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<tr>
<td>Ohm</td>
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<tr>
<td>Coulomb</td>
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<td>Joule</td>
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<tr>
<td>Volt-Ampere</td>
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<td>kW</td>
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<tr>
<td>Kilo-volt-ampere</td>
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<tr>
<td>Kilowatt-hour</td>
<td>kWh</td>
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<tr>
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Symbols for Quantities for Use in Electrical Equations, etc.

<table>
<thead>
<tr>
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<td>Power</td>
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<td>Frequency</td>
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<td>2π x frequency</td>
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<td>Wavelength</td>
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<td>Phase displacement</td>
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<tr>
<td>Temperature, absolute</td>
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<tr>
<td>Quantity or charge of electricity</td>
<td>Q</td>
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<tr>
<td>Current</td>
<td>I</td>
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<tr>
<td>Voltage (EMF or PD)</td>
<td>E or V</td>
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<tr>
<td>Resistance</td>
<td>R</td>
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<td>Specific Resistance or Resistivity</td>
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<tr>
<td>Conductance</td>
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<tr>
<td>Specific Conductance or Conductivity</td>
<td>γ</td>
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Last month, it was decided by Council that due to the lack of space in our VK5 Insert, the President’s Notes should be incorporated into Five-Eighth Wave. “Good”, I thought. “That will be less for me to write”. Some hope, guess who is Acting President this month whilst the President has been working in Alice Springs? Still, a couple of metropolitan clubs did come to my rescue with reports on their AGMs.

ADELAIDE HILLS ARS INC
The Adelaide Hills Amateur Radio Society Inc have sent word of their new Officer Bearers. President is Marshall Emm VK5FN (of Pounding Brass fame), Vice-President is Hans Smit VK5YX, Secretary Gordon Welsh VK5KGS, and Treasurer is Douglas Head VK5NDH.

They would also like it noted that their address for the club is now PO Box 401, Blackwood, SA 5051, and new members are always very welcome at their meetings on the third Thursday of each month — 7:30pm, Uniting Church Hall, Blackwood Roundabout.

The Society also run Novice Courses, details of which are available from Hans VK5YX. I would also like to thank the Club for taking on the organisation of a Display Station at Mitcham Rotary Club’s Leisure Activities Day, on Sunday, 4th May, in the John Creswell Hall. Pop along and say Hello!

SOUTH COAST ARC
The South Coast Amateur Radio Club has also had a re-shuffle of its hierarchy at its Annual General Meeting. The Committee for 1986-87 is as follows:

President, Russell Smith VK5KAK; Secretary (no nominations at date of writing — all offers welcomed); Treasurer, Viv Lohmeyer VK5AVL; Components Manager, Neville Pudney VK5ZHP; Publicity and OSL Manager, Rob Durbridge; Newsletter Editor, Barry Blaby VK5TO.

Their main activity has been the building and setting-up of the RTTY repeater, a first in South Australia. Those singled out for special mention include Nick VK5NT and his wife Diana, Graham VK5AGA, Bernia VK5ABS, Neville VK5ZHR Mike VK5MT, Alan VK5KAL, Bob VK5KNE, Lee VK5NK, Olim VK5SGL and Craig VK5ZAW.

Not all of these were club members but all helped in some way. Also, I am sure that the Club would like me to thank John Gill VK5AJG, who has been their President and Newsletter Editor for several years now. John has always been very conscientious in both positions and a good liaison between the Club and the WIA. I am sure you will be missed, John.

They are also pleased to welcome visitors and new members to their meetings on the first and third Thursdays of each month. Time is 7.30pm at the Karawatha Community Centre, 12 Baden Terrace, O’Sullivan Beach.

DIARY DATES
Tuesday, 27th May — General Meeting of the WIA VK5 Division. Speaker will be Barry Bryant VK5KAU, speaking on the Central North Amateur Television Repeater — its history and technical details, with video and/or slides to illustrate it.

A Call to all Holders of a NOVICE LICENCE
New you have joined the ranks of amateur radio, why not extend your activities?

THE WIRELESS INSTITUTE OF AUSTRALIA (N.S.W. DIVISION) conducts a Bridging Correspondence Course for the AOCP and LAOCP Examinations. Throughout the Course, your papers are checked and commented upon to lead you to a SUCCESSFUL CONCLUSION.

For further details write to: THE COURSE SUPERVISOR W.I.A. PO BOX 1066 PARRAMATTA, NSW. 2150

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REPAIRS AND CHANGE-OVER SERVICE AVAILABLE TRADE ENQUIRIES WELCOME
**Over to You!**

In the March edition of Amateur Radio, page 55, under the heading of *Inaugural Meeting*, a photograph of the South West Zone of the WIA, NSW Division was displayed.

Picture this: the former President, Jim Corbin VK2YC, and I was sad to note that he was a Silent Key. The contribution was made by Jim Edge VK2AJO.

When I was a boy, living in the Sydney suburb of Eastlakes, Jim was our family chemist in the late 40s and early 50s. I knew his younger son, Vince, well and I was told that his dad was a Ham.

I must admit I was confused. I could not imagine a rather sober and methodical man as Mr Corbin being an actor and I said as much to his son. He then said, "No, young fool" or words to that effect and went on to explain that his dad was an amateur radio operator and talked to people "all around the world."

As a young teenager then and believing that talking was the God Given Right of all people of my age group, I was very impressed. One had an opportunity of talking to the world and it appeared that very few had the facility of talking back — an advantage that I liked at once.

I spoke to Jim (from the other side of the counter — that is Mr Corbin) and he explained that much of his transmission was CW. I then pondered the vagaries of Morse and the allocated bands propagation, potential. At that time, I put this on the side, but the seed was sown.

Many years later, I pottered around and finally I became a Ham and I think I have Jim Corbin to thank for it. He likened the attainment of this qualification to a combination of the properties of Captain Marvel and a standing invitation to Camelot (and quite rightly too).

I would be grateful to Jim Edge or any other persons who can tell me what happened to Jim and his family after Eastlakes. Did any of his siblings follow in his footsteps? You faithfully.

Peter Jackson VK4ZR
347 Monaco Street,
Broadbeach Waters, Vic. 4217.

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**ENLIGHTEN OR ENLIVEN**

Referring to Tony Tragle’s letter and the editorial reply in the March issue of AR. Tony has raised an important issue and his argument deserves more consideration. The Amateur Radio Movement is threatened by a developing authoritarianism in organisations formed from minority groups belonging to the Amateur Radio Movement. I offer the following to enlighten or enliven the discussion.

The Amateur Radio Movement is not intangible: it comprises persons whose object is the art of amateur radio communications. Some members of the ARM choose to participate in the International Amateur Radio Service as defined in Article 1 of the ITU Radio Regulation. These amateurs are united by the ITU definition, their licence qualifications and the international agreements and national laws which regulate their participation in the radio spectrum allocations. These laws and agreed regulations prevent anarchy by amateurs in the radio spectrum; this is the only effective protection.

Some of the licensed amateurs (a minority world-wide and about 50 percent in Australia) choose to belong to national organisations such as the WIA. These organisations provide a service for their members by raising awareness of the Amateur Radio Service among national communities. They do not and cannot control the ARM.

A majority of the ARM choose not to belong to a representative organisation. There is no compulsion to belong (except in a minority number of countries) and it is not necessary to belong to participate. Amateur radio is one of the few spare-time activities which does not require facilities provided by a supporting club, league, institute, etc. (The pitch is self maintaining natural resources; bring your own equipment and there will be no compulsion to belong.) The fact is the reason amateur radio attracts many independent participants and the existence of these is an insurance against an ascendency of authoritarian organisations with a preference for the power of numbers rather than competent service. The ARM is not leaderless, the directions are clearly indicated by people with talent who realise that leaders are for the benefit of the followers and not vice-versa. These same leaders have founded an administration which makes it easy for genuine amateurs to do what they want to do. The great danger is the possibility of being misled by the proponents of unplanned changes.

Representative organisations, in their occasional recruiting campaigns, use the argument that representations made by them, the administration are more effective. This is fallacious, an individual acting outside the party line has many more avenues available than the organisation and these can be more direct and more effective if a particular issue has to first run the gauntlet of organisation officioamid. If an administration accepted group representation only, it has to determine firstly whether or not the proposal is supported by a majority of its membership and whether or not the organisation membership represents the views of independent persons. How does the WIA determine the popularity of its proposals? Secret ballot? Any other form of democratic canvassing? Decision by the Executive acting without consulting members?

The campaign of shaming independents into membership is not 75-year-old wisdom. The ARM needs a good population of independents, they are not free-loading and it is insulting to suggest that they are. They are not cajoling us to forego our group activities. The future of amateur radio does not depend on the activities of supporting organisations. Doing something for the love of it is a human characteristic and people will be radio amateurs for the love of it, with or without the support of a representative organisation. You faithfully.

Lindsay Lawless VK3ANJ
Box 112,
Lakes Entrance, Vic. 3909.

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**FOOD RECIPE BOOK**

I am replying to Glyn Gibbins-John VK2DJV, whose letter appeared in this column of the March edition, and whose comments may have puzzled many readers.

In order to clarify the matter, it is obvious that Glyn ordered and obtained the Cook Book produced by the Wagga Amateur Radio Club through Dave VK2ZZE, with the misunderstanding that it was of a technical nature, but in fact turned out to be a food cook book.

Wagga Radio Club decided to give away a book and explained his disenchantment and his money would have been refunded.

This letter is written, not to vindicate the ARM’s solicitation of funds. If it was the wrong message, it was a mistake. It is regrettable in Glyn’s case, that the ARM has many more avenues available than the WIA organisation and these can be more direct and more effective if a particular issue has to first run the gauntlet of organisation officioamid.

What he should have done was to write to Dave VK2ZZE, who was Mawson’s main base wireless operator and mechanic.

In his book, Mawson mentions Hannam repeatedly and on page 87 he says, “Hannam had various occupations, but one was to attend to the needs of the inner man, until the completion of the hut. There is no doubt that he was regarded at this time as the most important and popular member of the party.”

S N Jeffreys relieved Wally during 1913, but many Old Timers in Sydney will remember VK2AXH.

I don’t think that any signals were ever received in Melbourne but the story goes that a wag in Melbourne pretended that his signals came from Mawson with a message to the Governor that, “Douglas Mawson had climbed the South Pole and got a splinter in his toe.”

Keith Ballantyne VK3AKB
“Staverton”
Quamby Road,
9Beaconsfield, Vic. 3808.

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**POLAR RADIO**

It was coincidental that, around October, the Wagga Radio Club produced their excellent food recipe Cook Book, edited by Dave VK2ZZE. I obtain the great fun that writing a book congratulating the Club on the marvellous team effort, as no less than 70 amateurs, family and friends contributed their combined recipes.

Large radio clubs have high overhead costs, financed by memberships subscriptions. In order to keep these annual subscriptions at an affordable level other finances are augmented by various functions — selling raffle tickets and cook books.

In Kennedy’s case, it was regrettable that the WIA representative was not present to receive the book. Mrs Hannam presented the book to the Club with a message. No doubt it was appreciated.

It is not necessary to belong to the International Amateur Radio Service as defined in Article 1 of the ITU Radio Regulation. This letter is written, not to vindicate the ARM’s solicitation of funds. If it was the wrong message, it was a mistake. It is regrettable in Glyn’s case, that the ARM has many more avenues available than the WIA organisation and these can be more direct and more effective if a particular issue has to first run the gauntlet of organisation officioamid.

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Keith Ballantyne VK3AKB
“Staverton”
Quamby Road,
9Beaconsfield, Vic. 3808.

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**POLAR RADIO**

I was most interested in the article on page 17 of Amateur Radio for the month of March, 1986, titled: Polar Radio — 1912 style.

On page 19 is shown a picture captioned: The station on Adelle Land.

What you apparently did not know and neither did the author, G4FAI, was that this was a picture of Wal Hannam, then 26 years of age, for many years and up until the date of his death, the holder of the call sign VK2AXH. Wal Hannam lived in retirement at Hillcrest Road, Terrigal, New South Wales, where I met him in 1959, when he was about 74-years of age. Wal presented me with one of his OSL cards, which stated on one side that it...
was the “Golden Anniversary card of VK2AXH, founder of the Wireless Institute of Australia 1910, first license 1908”.

On the other side of the card is the same picture as in Amateur Radio, endorsed with the words “The picture shows VK2AXH (Wal) in the Antarctic 1912”. He endorsed the card for me for “personal contact 29-5-59”. (No doubt a number of older amateurs probably have similar cards). Wal by the way, was taken by the famous Australian photographer, Frank Hurley, who was also a member of the expedition.

OCEAN ANNIVERSARY CARD OF VK2AXH
FOUNDER OF THE WIRELESS INSTITUTE OF AUSTRALIA 1910
FIRST LICENSE 1908

W. H. HANNAM

Wal was a member of the original Sir Douglas Mawson Expedition which left Hobart in the AURORA on 2nd December, 1911, for the Antarctic. A base was established on Macquarie Island and Wal flew there as the expedition’s wireless operator and landed a party on an undistinguished portion of the Antarctic continent.

Wal was responsible for the choosing of the site for the wireless station on Macquarie Island, known as Wireless Hill, which rose to 350 feet in height and formed part of a peninsula running in a north-easterly direction from the main island. It had been chosen by Wal because of its open northerly aspect, and because the site would probably have a good throw-off south to the main base in Antarctica. This fact was clearly acknowledged by Sir Douglas Mawson in his account of the expedition which he published in 1915. Wal also built the hut for the radio equipment and a separate one for the petrol motor and landing gear. He set-up the radio station at the main base at Adelie Land, (see map AR, p18), and here operated the station for two summers and one winter, before returning to Australia. He was also assistant magneton for a time.

The operator referred to in the article, S N Jeffreys, was the wireless operator who relieved Wal Hannam in Adelie Land. He joined the further leg of the trip in the AURORA which left Hobart on 26th January 1912, to return to the Antarctic. Wal left Adelie Land on 6th February 1913, and returned to Australia. Both Jeffreys and another operator, A J Marshall, during 1979 and 1980, and at odd times since then, have operated the station through WIA membership, then they have no one else to blame if more powerful commercial interests succeed in reducing the hard won benefits previously obtained.

Wal Hannam was the founder of the Wireless Institute of Australia 1910, first license 1908”.

Further information about Wal Hannam was provided in Amateur Radio 1984, on page 51, when his eldest nephew, John Bathgate (a non-amateur) wrote of his exploits in amateur radio. Prompted by Mr Bathgate’s information, July’s issue of AR contained a photograph of the above mentioned card and information that the Radicliffe Radio Club had much photographic memorabilia of the 1911 radio shack at Cape Denison. It had been reconstituted into attractive black and white photographs which would be suitable for reproduction in AR. — Ed. AR

QUALIFIED COMMENT

Hading had some association with Federal WIA administration and affairs over several years, I feel qualified enough to comment on the nonsense in Tony Tregale VK3GQ’s letter in March AR, and the desire to direct my remarks to him via the same mode.

Amateur repeaters, whether WIA funded or not, are by their licensing structure open access.

The WIA, under the terms of its Constitution cannot, has not, and will not suggest other wise. It exists solely for the purpose of the furtherance and improvement of the Amateur Radio Service.

Its administrators are volunteer amateur operators giving the valuable time freely to help others, members and non-members alike. To suggest that the WIA promotes discrimination, and gains finance and power, shows an ignorant and complete lack of understanding of the real facts.

For many years, the WIA has struggled to achieve the benefits which Australian amateurs can get in the world. We have been able to achieve these benefits through sheer determination, and the financial backing of its members.

WARC 79, Novice Licenses, Amateur Examinations, K-calls, the Government recognition of WICEN, the retention and expansion of Amateur Bands, are just a few of the results achieved by WIA volunteers.

How many more of the pioneering spirit of amateur radio would we have if the WIA was not there? I feel it is not up to those people to speak — you have the benefit of the WIA. WIA is a good thing.

None of us can predict what the future will bring. The WIA will certainly fight on to keep our privileges. — Ed. AR

HOW MANY HAVE BUILT A TRANSMITTER?

After reading the editorial in March ‘86 AR, I looked up the January issue and March ‘Over To You!’ and can only feel that Tony Tregale is of the opinion that, in today’s society at least, there is a tendency for organisations, or perhaps of some individuals, to plan their activities within organisations to tend to become self-servind in their outlook, or to make assumptions that what the organisation does is good for all, because the organisation dictates it. He sometimes has a point there, human nature being fallible. It’s good to see he has that view and has also participated in the administration of the activities of the WIA instead of just being an armchair critic.

I also noted the editorial interest in how many of us, newcomers built their own transmitter? How many have built their first (or any) transmitter over the last 40 years?

My interest in radio started when I was 13 or 14 years of age, (or in 1942 or 43). However, I continued my activities to constructing various forms of receivers until about 1978. In October of that year, a meeting was held at Urunga (North Coast, NSW), which I attended, and it was decided to form a local amateur radio club in the general district of Coffs Harbour.

Since my teenage years, I have purchased new and occasional copies of the ARRL Handbook and I still have a copy of the 1986 edition, purchased for $8.70, which had a circuit and construction data for a Transistor 5 Watt transmitter for 80 and 40m.

I had some green plastic plug-in coil formers, bought for possible use in a future receiver years before. As they were one inch in diameter they fitted the bill nicely. An old ex-PMG telephone box of dove-tailed wood, with a pie piece of Marinette wood for the top board, and pieces of tin plate, cut from food tins tacked to the bottom for soldering components and wire where needed was used for a chassis. I used 12 volts input of 28.

This unit has proved an intriguing design as it uses a 250 mA pilot lamp to tune the amplifier and a 150 mA pilot lamp to tune the output and has done duty on several club displays since its construction.

The circuit called for two 2N2102 transistors which were unavailable locally, so I substituted RS 208Bs, purchased a crystal for 3.530MHz and a Morse key. I already had a DX 160 receiver.

Since then I have had CW contacts in Australia and New Zealand using this transmitter.

I obtained my NAOCP licence, VK2VOJ, on 26th June 1979 and my AOCP, VK2DMV, on 10th June 1980.

Other small transmitters I have constructed include the ARRL Sardine Sender 60m-cm crystal controlled unit, a VFO from the 1979 ARRL coupled to a HB amp and PA on 80 metres also, and a VFO on 28MHz which demonstrates how frequency can vary with temperature on 10 metres.

My main interest in radio remains with such home-built projects although I obtained an FT101 in 1979 and have had a lot of interest experimenting with different types of antennas to suit my perceived needs of the time.

I would like to thank the WIA for making these study courses available. Also, many thanks to Cec Batchelor for the QSL cards, to all the people who have appreciated the work of the WIA Code Practice Sessions, NSW and SA in particular, during 1979 and 1980, and at odd times since then when I determined to brush-up. Also thank you to Marshall Emm for Pounding Brass.

With best wishes,

Paul Ireland VK2DMV, 109 Victoria Street, Coffs Harbour, NSW. 2450.

THANKS WIA

I first became a Novice in August 1985, as VK2NLK. I passed my 10 WPM CW in November and then in February I passed the full-call theory. I used the WIA novice kit and AOCP complete course, and then passed the VK5 slow Morse broadcasts also.

I would like to thank the WIA for making these study courses available. Also, many thanks to Cec Batchelor for the QSL cards, to all the people who have appreciated the work of the WIA Code Practice Sessions, NSW and SA in particular, during 1979 and 1980, and at odd times since then when I determined to brush-up. Also thank you to Marshall Emm for Pounding Brass.

With best wishes,

Laurie Keane VK2CXX, 80 Hudson Parade, Clareville Beach, NSW. 2107.

HELP WANTED!

Has anyone any ideas if and where I may obtain a Log Book program for radio contacts which will operate on my Commodore 64.

Regards,

A M Stephenson VK4WBZ (soon-to-be VK1NUN), Woden, ACT. 2606.

NE'ER A COMPLAINT, BUT... 

I do not usually complain about anything, (being 82 years old), and don't really count a story or two as I live a relatively secure and full life, but I am just a little puzzled about one thing. I refer to the QSL cards I have and have not received from stations I have been in contact with over the years.

I always QSL 100 percent and expect others to do likewise, but following is a breakdown of stations:

VK1, six stations worked, one QSL received; VK6, 41 contacts, six QSLs; VK3-28 contacts, 10 QSLs.
INSPIRED

I was interested to read the editorial in February's Amateur Radio, concerning technical articles. I have always enjoyed home-breeding and the comments in the editorial inspired me to sit down and describe a VFO that I have been very satisfied with. If the ISM is inspired, it is my hope that someone who may take up the challenge and bring some action — here's hoping.

For the real amateurs I thank you. Many may ask why I don't upgrade to a Full Call. With up to 570 for examinations fees — no way.

Geo Payne VK4NEV,
12 Thomas Street,
Maroochydore, Qld. 4558.

POWER LINE INTERFERENCE

I was pleased to see Sam VK2BVS, taking up the Power Line Interference problem. Although Sam has touched on the main stumbling block to getting action from the authorities, that of politics, he has not mentioned this is the main stumbling block to getting action from the authorities.

D.O.C. in Canberra agree in principle (or in theory) that there is equality, i.e. complaints from amateurs about interference to their reception are treated equally to complaints from other services — in practice this is not so. D.O.C. State Offices, and Field Officers have been instructed for years that it is D.O.C policy not to investigate incidental radiation (or any other interference) affecting the reception of authorised radio communications by stations in the Amateur Service.

It is time the WIA (so far the only ones allowed to talk to the D.O.C.) got off their posterior and got on with some positive and effective action on this long standing problem.

Tony Tregale VK3QO,
38 Wattle Drive,
Watsonia, Vic. 3087.

1985 REMEMBRANCE DAY CONTEST

The Orange Amateur Radio Club is unable to undertake such a contest now, as five logs have been posted in the stead of the envelope to the FCN, only three (DEW, DXG and AOQ) appear in the results. The others, ASY-20 and DMS-20 are missing! Surely Australia Post is blameless in this case?

The same applies to BFR and BNH — in one posting one listed, one missing.

It is suggested that, as a proof of a log being received at the club, the name of the sender should be included with the log. Then the FCN puts his rubber stamp on the back of the envelope and posts it back. No extra work for the FCN — he's going to the Postal Office anyway — but confirmation that your log got there.

Wally Watkins VK2DEW,
Honorary Secretary,
Orange ARC,
PO Box 1065,
Orange, NSW. 2800.

AR—FUTURE

With respect to the article in February AR, AR — the Future, I am one of the group that entered amateur radio as a direct result of the CBRS. I obtained my novice licence several years ago, and my limited and my amateur licence. To me it seems a loss of interest in telegraphy, I am now mainly interested in the VHF/UHF side of the hobby.

When I was a CBer, I always looked at amateur radio and felt that it was too hard to get into, that if I continued in CB, until I was told of the novice licence. Even then I was discouraged by the CW examination. Looking back, I still feel the same, and have always said that a lower limited licence class than the novice class would have helped. The proposals in February AR is just what is needed to encourage newcomers to this hobby, particularly now that we are in a low part of the sunspot cycle.

A licence, similar to the one proposed, with an exam similar to the current novice theory, but without the CW would be just right. Then a pass at five words-per-minute would be needed to obtain the current novice licence, as it is now.

If an enhanced version of the current novice licence stamps will ring, then a licence between it and the current limited licence, to give the proposed intermediate class, with its digital type privileges. Finally an extra class between the limited and full class to give all the privileges of the current full licence and a new full class with all the defined restrictions removed.

Please let us encourage new CBers, and the computer kids to join AR.

Yours sincerely,

Peter Scales VK6KHZ,
Paraburdoo, WA. 6754.

HELP OFFERED!

Some time ago I found it necessary to overhaul my 20-year-old Mosley TAA3Jr beam antenna. After some correspondence with the manufacturer, I found that reconditioning instructions from Mosley, which resulted in as new performance. I also still have the original assembly instructions.

If any reader has a similar record. From Japan I have received two QSLs for 62 contacts. 23 for 62 contacts, eight OSLs; VK5-21 contacts, 100 cards for 300 stations contacted and others — all with stamps on the back of the envelope and posted it back.

This reminded me of the old maxim, "the many of today's Old Timers started when they were teenagers" so the face of amateur radio may never be the same as imagined. It is interesting to note the 52 percent of the present national WIA membership is 50-years of age and over. Most of this group, whose average life span approaches 70-years, would operate on HF only; something to be remembered in future planning, if balance is to be preserved.

In spite of my distaste for CB, a beginners 70cm Telephonic Permit has merit. However, it must be remembered, that as examinations are made easier, the trend will be towards a CB mentality. The old VR is gone, there is no experimental and the technical revolution walked off for good; VK2ZTB will be bought over the counter and plugged in. In my view, the standard of amateur radio is being eroded by a mandatory requirement of up-grading.

I have no argument with the author's of this paper when they say, "that digital developments in mobile communications will revolutionize the front of technology and experimentation". If this occurs, the face of amateur radio will be changed radically. The beginner will know no other set of the art and order, at will like it, but the Old Timer will begin to wonder of the hobby should be a given name to fit its new image. The long term benefits of enticing those who are concerned with computers first — and radio second — may not turn out to be for the best. We all know that S and T alone have failed to fully utilise the facility for the amateur radio service, the Amateur Radio Service is incomplete and likely to disintegrate.

It might be an idea to post a moment on that piece which is already influencing our technological future — a computer. It is the very simple-mindedness of the computer that enables it to play a significant part in it highly symbolic relationship to the rest of the world. How many of us understand not. Human beings, by and large, are motivated, imaginative, intuitive, idiosyncratic, humorous, fanciful, sentimental, amoral and capricious, etc. Marvel though it may be, a computer is simply a soulless machine that pays undivided attention to details that would drive a person to distraction.

My activities as a DXer can be used as an example of the above. In dealing with a pile-up, I can indulge in an endless number of capricious decisions taken in quick order, at will. It is all illegal that the lowest signal or choose to ignore it, decide to..."
reply to a particular fax because he sounds like a computer. When the call is made and the operator still calls, and has become a pet, or choose to ignore her, select another call because it is vaguely familiar and so on — as the options are endless. All this, through the QRM cacophony of a hundred callers. What computer exists that can be programmed to function in this manner? None!

Another eerie interface existing between man and machine exists in our hobby, and the computer is an integral part of it. It can be demonstrated scientifically that many who work with these machines become beguiled by their qualities, reading a kind of alter-ego into them, and deriving comfort from the fact that the product of their minds transferred to a VDU subtly hypnotises. Man will always be irresistibly drawn by the apparent benefits of new technology, no matter how dangerous it may be to his own sake — a lure that may eventually undo us.

To an historian a study of past events enhances one’s ability to predict future trends, but the present, perhaps more than any other time in history, needs the alchemy of judgements. The opinions of the 50 percent of VKs who are not WIA members also deserve equal consideration. I would love to write that our real destiny does not lie as much in our own lay hands as it does in the coercive powers of commercial interests (the ORAL licensing proposal is one example). As well, it will be briefly considered by decision makers, which unfortunately, many of these decisions will turn out to be wrong and worse, irreversible — but the implications behind the spoken word are clearly conveyed.

Alan Shawsmith VK4AS, WIA Queensland Historian, 35 Whynot Street, West End, Qld, 4101, AR

I refer to the excellent article by Messrs Jim Linton and Roger Harrison in the February 1986 issue of Amateur Radio. As a member of the WIA since 1980, I would like to add my thoughts to the fine work undertaken by these authors.

As for Morse code, I feel that this must be retained, not only for those who are interested in amateur radio, but also as a backup in case of emergencies. If there is any doubt about the usefulness of Morse code, then let those who are in charge of communications systems consider the importance of having a reliable and universal method of communication.

I therefore strongly support the retention of the Novice licence. Without a valid Novice licence, the operator would be unable to transmit on the 80-metre band. The Novice licence is an ideal method of introduction. It is well known that many people who start in the hobby as Novices eventually work their way up to the full call. This is a natural progression and I believe that the Novice licence should be retained.

I endorse the proposals of Messrs Linton and Harrison and hope that the proposals will be considered. Thank you.
Silent Keys

MR A BEAL VK5NAB
3rd March 1986

MR VERN BLACKMORE VK5VB
26th December 1985

MR ALBERT DUROSE VK3DUR
11th March 1986

MR HAROLD FISHER VK5EX

MR ALBERT POELSTRA VK4JAB
7th February 1986

Obituaries

ALBERT DUROSE VK3DUR
On 23rd January, Albert Durose passed away suddenly.

Originally in the motor trade, Albert, some thirty years ago, joined the staff of Telecom and later went into communication expanded, and he advanced to Senior Technical Officer 2.

During the late 70s, he studied with TAFE and obtained the limited (Novice) call signs of VK3XAS and VK3VTN. These were combined in the call VK3KBB.

A full call followed — initially VK3DHO, which, in 1981, was changed to VK3DUR.

Although comparatively recently licensed, Albert was a very knowledgeable operator and further studies continued until his death. Metrical care in construction was a characteristic and his antennas were models of precision.

Albert was keen Freemason and when tragic fires and other disasters occurred and the Freemasons formed a Task Force to assist sufferers, communication was frequently needed and Albert was among the first to volunteer. His skill and equipment in providing communications were used in the Macedon area during Ash Wednesday.

He was a founder member of MARNET — the Masonic Amateur Radio Net and had joined in a similar net operating in America.

Albert’s comparatively short life as an amateur was one of interest, progress and above all service to radio and his fellow man. He will be sadly missed.

Eric Smith VK3CES

HAROLD FISHER VK5EX
Harold Fisher VK5EX, of Renmark, a very private person, passed away on 11th March 1986.

Some 10 years ago, it became my privilege to contact Harold Fisher, and as Harold lived in Renmark, and I lived near Adelaide, personal contact was quite rare — we usually met when my wife Jeanne and I were on one of our ‘Safari’s’ to play golf and bowls in the Riverland.

‘Harold’s past is still rather vague to me, I only know that he was confined to bed, which I understand was as a result of polio and he was forced to live in a controlled environment.

This impediment, and confinement did not in any circumstance, filter through to those he spoke to on-air. I really believe he was the most genial on-air operator I have had the pleasure of talking to — always bright, always an optimist, and invariably engaged in some amateur orientated project, which several friends aided by sending him circuits and radio bits and pieces.

Harold was an inspiration to those of us who are gradually facing “redundancy” — despite all his difficulties and restrictions, I can honestly say I never heard one word of protest or despondency. What an example in this modern world full of trials and tribulations!

For the past six years, fellow amateurs VK5As ZP; ACJ; AHK and VG, plus the author, have had an early morning schedule with Harold on 80 metres, and Harold was always there first waiting for the early morning ‘cheerio’, and, as with many other contacts, he had in similar circumstances both local and Inter-state, these daily get-togethers cemented a firm friendship, and am quite sure could have in some small way, contributed to prolong Harold’s tenuous hold on health.

Vale Harold — you will be sadly missed by those friends of yours in the amateur fraternity. You were a superb example of amateur comradeship and fortitude.

* There may be factors in Harold’s life that require amplification, and I invite further comment from those who may know more of Harold’s early days...*

ALBERT POELSTRA VK4JAB
Albert lived in Bundaberg and was a very competent white stick operator. He passed away 7th February 1986.

Albert obtained his Novice licence in mid-1983 and in later 1984 achieved his LAOCR All theory study was done using Braille and radio work was done by dictation. I did not consider his blindness to be a handicap and showed great strength and determination while studying and could always find ways to overcome any difficulties he encountered.

He had been blind for 19 years as a result of disease and malnutrition suffered whilst a prisoner-of-war in Burma during World War II. Albert was one of the many prisoners who worked on the infamous Burma Railway.

This period was a sobering one, and an anti-war period. Albert was a member of MARNET — the Masonic Amateur Radio Net and had joined in a similar net operating in America.

Albert’s comparatively short life as an amateur was one of interest, progress and above all service to radio and his fellow man. He will be sadly missed.

SOLAR

GEOPHYSICAL SUMMARY — JANUARY

Solar activity was low and the Solar disc was without significant regions until the 13th when a region began to grow rapidly. This was associated with a sharp increase in Fm Flux levels, which peaked at 83 on the 16th. The region rotated over the west limb. On the 17th, Solar activity was again low, the disc without spots until the return of the region on the 30th. This brought another rapid increase in the 10cm Flux levels.

The 10cm readings for the month were: 1 = 69; 2 = 70; 3 = 71; 4 = 72; 5 = 73; 6 = 75; 7 = 78; 8 = 79; 9 = 79; 10 = 79; 11, 12 = 74; 13 = 77; 14 = 79; 15 = 78; 16 = 83; 17 = 77; 18 = 76; 19 = 73; 20 = 72; 21, 22 = 70; 23, 24 = 69; 25, 26 = 70; 27 = 69; 28 = 72; 29 = 73; 30 = 76; 31 = 79. Average was 73.5 and the Sunspot monthly mean was 1.3.

The running yearly average was 16.9 for July 1985.

**GEOmAGNETIC**

1 January The field was at mainly active levels until 1000 UTC and then unsettled. A = 18.

7 January The field was at minor storm level until 1400 UTC. A = 25.

21 January The field was at active levels between 1300-2100 UTC. A = 18.

23 January The field was at active levels after 0600 UTC. A = 15.

25 January The field was at mostly minor storm level. A = 24.

**27-30 January**

The field became disturbed early on 27th and was at storm levels from 1600 UTC, then active to storm levels for all of the 28th. It then subsided to unsettled levels on 29th and 30th. A = 35, 33, 16, 4, 8.

Most of the disturbances in January were relatively weak, the exception being from the 27th until the 30th. During this disturbance, the active A index rose to 35 on the 27th and to 33 on 28th. This follows the 30-31st December event as part of a new recurrent sequence. A further severe disturbance was to be expected on 22-25th February.

There were eight days of A15 and over with the quietest days being 13 and 19th with A2. The average A over the past six months was 12.12.

Details next month of the event of 8th February, which produced an A of 298, believed to be the largest since the last maximum.

From data supplied by the Department of Science IPS Radio and Space Services — January 1986.

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[Diagram of Ionospheric Predictions]

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The only publication listing licensed radio amateurs throughout the world since 1920.

[Diagram of Ionospheric Predictions]
Hamads

WANTED — NSW

KENWOOD TS430S TVCR: in good condition. Also Icom IC-402 (70cm Portable). Jules VK2EZE. Ph: (09) 572 4562.

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WANTED — VIC

ATTENTION TO SERVICE TECHS — MOBILE RADIO: I need circuit diagrams & any relevant info for Pye Europa UHF tvcr Type MFSUV/UV3. Unit ex-commercial use for amateur conversion. Cost reimbursed. All phone calls from = 9am, 23rd May 1986.

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FOR SALE — NSW


DRAKE T4X — R4A: Combination 160-10m, CW power supply & manuals in superb cond. Kenwood gear (tax 12/SM-20) had very little use $320. Allen RX110 rx 80-10 MHz. GC $100. Ray VKAWO, QTHR. Ph: (069) 6 4137.

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Passband tuning, a deep IF notch filter adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.

Passband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.

Superior Receiver Performance. Utilizing ICOM’s DFM (Direct Feed Mixer), the IC-R71A is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

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HAMs should be sent direct to the same address, by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Remains, and reserves the right to refuse acceptance of any material, without specifying a reason.

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Everything you could possibly want in a mobile scanner IS in our brilliant MX-4000. Full access to 20 channels, covering 6 bands... including Am, up to 800MHz. Features priority control, scan and search PLUS full display messages. And with an optional power supply it doubles as a powerful base station. Comes with rechargeable NiCad battery pack.

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$249

versatile 2m mobile

WAS $399

SAVE $50

$349

Dick Smith Electronics

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Page 2 - AMATEUR RADIO, June 1986
CHILDREN’S DAY

International Children’s Day, 1st June, will see the amateur radio station of the Chinese Radio Sports Association (CRSA), together with the Beijing, Shanghai and Sichuan stations, participating in a festival for young amateurs.

These amateurs, mostly school students around 14-years of age together with a few primary school children around 10-years have been invited to operate the transceivers and send festival greetings to children world-wide. These greetings will be sent in English.

Last year, in a little over an hour, more than 70 stations had been contacted. Amateurs in the USA, USSR, Japan, Canada, India, Brunei and Hong Kong expressed their delight in contacting the young Chinese amateurs.

China began amateur radio communications in the late 1920s. The first amateur station of New China, BY1PK, was established in 1958. By 1966, six stations were established in the country, however, during ten years of cultural revolution all radio operation ceased. In March 1982, the CRSA station resumed operation with overseas stations.

With BY1PK, the stations of BY4AA, BY8AA, BY5RA and BY1QH are experimental bases for radio communication research and cradles for nurturing young radio specialists. Some children’s palaces, scientific research stations, universities and colleges plan to set up amateur radio stations to meet the needs of the young amateurs.

Building small transistor receiver sets has long been a popular past-time with Chinese children, but it has only been in recent years that transmission has also become involved.

BY1SK is located in the Children’s Science and Technology Centre of Beijing’s Zuanwu district and has a radio group of around 24, chosen from applicants from middle and primary schools in the district. They attend the centre twice weekly to study English and to practice Morse code. The group is in the care of instructor Gong Kelu, who participated in radio activities when he was in middle school.

Mastering Morse and studying English involves a lot of hard work and occasionally the children become bored and want to drop-out. On these occasions Gong Kelu relates a story of a young telegrapher during a disastrous earthquake in the city of Tangshan, during 1976. Though he had been badly injured in the first shock, he rallied his forces and when other communication lines lay in rubble, he managed to keep in communication with Beijing so that the central government could plan rescue efforts. This helps the children see how important the skills they are learning really are.

Youngsters from the group are assigned to be in charge of radio communication in the city of Beijing during summer camps and sports meets and have been highly praised for their good work. Adapted from China Reconstructs, October 1985 which was contributed by John Brennan VK4SZ

MORE TUB THUMPING!

I note in last month’s issue that another member is taking me to task over the desirability of all amateurs belonging to their national society. He suggests that the individual non-member can still exert an influence on the political processes by which our legislative controls evolve; that the lone wolf can still have a political effect.

With respect, I am still forced to hold the opposite opinion. I have had experience over many years with various WIA committees assembling information on which negotiations can be based. Mostly such negotiations are with DOC or other Federal departments, but may also be with other societies, with IARU, or at Divisional level, with State or local government authorities. They may also be submissions to independent inquiries.

In some cases individuals as well as the WIA, have put forward their ideas, for example by letters direct to Ministers. Usually it has been plainly obvious that individual opinions which do not reflect popular concepts will be politely, but effectively ignored. But faced with the task of establishing a consensus acceptable to the majority, a Minister (or his advisers) can only take as a representative view that which is proposed by a representative body.

Frequently the WIA is asked by DOC what is our opinion of this or that individual submission. Clearly, the fact is that Government bodies do not have the time, or the inclination, to piece together a fragmentary jigsaw of individual letters. An organisation representing the majority of concerned individuals fits much better into the political system. If you want your view-point to carry the maximum of political weight, make it clear to your Institute first.

Arguments like these have been used by unions and associations of all kinds for decades. Few people will seriously disagree with them. But do not let us confuse them with other arguments sometimes raised in favour of compulsory unionism. An organisation representing the majority of concerned individuals fits much better into the political system. If you want your view-point to carry the maximum of political weight, make it clear to your Institute first.

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Bill Rice VK3ABP Editor
THE HENTENNA

The Hentenna was developed several years ago by members of the Sagami Club and was introduced to the hand-made mini-magazine, The Fancy Crazy Zippy. In January 1977, it was printed in the magazine Radio No Seisaku. It has become very popular with young people on 50 MHz.

This antenna was not developed by any antenna technicians but by radio amateurs through their experimentations. This is a real antenna, for the amateurs, of the amateurs antenna.

Recently, many people in Japan have been working DX on HF with the Hentenna, with two people completing WAC on 28 MHz using it.

LET'S MAKE THE HENTENNA

Many may think it a very strange name for an antenna but HEN means weird in Japanese. So let us see what is weird about it!

Figure 1 is the basic diagram of the Hentenna. It is half a wave length high and 1/4 of a wave length wide. It produces horizontal polarisation. If you know a little about antennas you may have thought that a vertically polarised wave would be produced. This is the first weird thing about the Hentenna.

Figure 2 shows how to adjust the SWR. The lead point is moved along the element and fasten it where the SWR is the lowest.

It has additional weird characteristics. It has as much gain as the Yagi antenna, though it is much simpler. (Technical Editor’s Comment: Antenna Gain claims should always be taken with a grain of salt. Particularly unsubstantiated claims. DX QSOs by ground wave have been made with the Hentenna. Moreover, one amateur used the Hentenna with a 1.5 watt SSB transceiver to QSO between Izu Peninsula and Tokushima, a distance of about 450 km. This is unbelievable and also impossible with a dipole antenna.

Now, what if you cut the Hentenna in half? It still works! This is called a Fork Hentenna. (Figure 3). In this way, you can make a Hentenna which is suitable for 144 or 430 MHz.

The third way of constructing a Hentenna is to use aluminium pipes for the top and the bottom elements, and wire for the sides. This method is shown in Figure 6b. This is a very useful, portable antenna.

The third way of constructing a Hentenna is to make all the elements of aluminium pipes (Figure 6c). In this way, you can make a Hentenna which is suitable for 144 or 430 MHz.

Any of the three methods described above may be used, but the easiest method is explained here.

Set up the frame as in Figure 7. The frame needs to be very strong, so it is advisable to make it with wood, bamboo or aluminium pipe.

Connect both ends of an eight metre length of stranded wire to make a circle. It is okay to use a solderless terminal to link them together, but it is preferable to solder the joint. It will be necessary to allow a little more than the eight metres specified for a soldered joint.

The next thing is that it is not really necessary to make it half a wave length high and 1/4 of a wave length wide. You can make it a little fatter, thinner, taller or shorter. It still works well. A five to ten percent difference will not matter much.

Mr. Ota JH1FCZ, made a 3.5 metre high Hentenna for 50 MHz. It still worked very well.

The third thing is the way the SWR is adjusted. Figure 2 shows how to adjust the SWR. The lead point is moved along the element and fasten it where the SWR is the lowest.

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The wire element, just made, has to be fastened very tightly to the frame with some strong twine or polyvinyl chloride wire. See! It is beginning to look like a Hentenna!!

The coaxial cable can be either a 3c2v or 5c2v 75 ohm series or a 3D2v or 5D2v 50 ohm series cable. RG58U is also acceptable.

Connect the coaxial connector to the coaxial cable as shown in Figure 14.
OR ELEMENT

ELEMEN T

SLIDE THIS CLIP TO LOW-SWR POINT

OR

VERTICAL ELEMENTS OF THE HENTENNA

RA DIAT ION PATTERN

The Hentenna.

USE EITHER 75Ω OR 50Ω COAX CABLE

SWR METER

TX

AMATEUR RADIO, June 1986 - Page 5
When the cable is connected make a continuity test on the insulation and centre wire to ensure that there are no shorts.

Connect 70 cm of tinned antenna wire to a eight pin terminal board as directed in Figure 16a. Solder the coaxial cable to this and secure it with tinned wire or similar. (Figure 16b).

Temporarily, set up the Hentenna in your chosen location. Find the point of the element where the SWR is at its lowest and mark this point.

Take the Hentenna down again and solder the feeder to the marked points.

There! Wasn’t it easy? The only thing remaining is to erect it and steady it with guy-wires.

Presented by Kazunobu Nagatsu JK11ZF, 3310-1 Hei, Toyooka-town, Institute Monday, Ibaraki, 303 Japan and contributed by Ron Mills VK5SW.

---

Be part of the fun during the 1986 Novice Contest
But please remember to submit your log to the FCM

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Amidon Toroids. 1/8 watt resistors, Logic gates, TTL, CMOS & 74HC series.
The following program enables measurements to be calculated for a three-element beam.

With this program you will be able to find out measurements for a three element beam for any frequency between 20 and 10 MT.B choosing any spacing between .1 to .30 wavelength.

It will also give approximate impedance at the feed point.

All the measurements are given both in imperial and metric.

An impedance matching system will still be required and final tuning adjustment will still be needed. In other words, all the rules in putting up a beam still apply.

The listing is pretty straightforward and in line zero you may wish to alter the screen colours. It is now set for my monochrome monitor. You will find the whole program is pretty well formatted.

```
0 POKE53280,.4:POKE53281,4:PRINT"•"
5 PRINT:"J"
10 PRINT" *** PROGRAM BY JOSEPH ORTUSO***"
20 PRINT" FOR COMMODORE 64":PRINT
30 PRINT" A PROGRAM TO CALCULATE DIMENSIONS FOR A 3 ELEMENT PARASITIC BEAM"
40 FORI=1TO40:PRINT"-":NEXTI
50 PRINT" USE 1.5 INCHES OF O.DIAMETER TUBING FOR 20 MT."
60 PRINT" AND 1 INCH OF O.DIAMETER TUBING FOR 15 MT. AND UP":PRINT
70 PRINT" THE FORWARD GAIN FOR VARIOUS SPACINGS IS BETWEEN 7.5 AND 8 DB."
80 FORI=1TO40:PRINT"-":NEXTI
90 INPUT" WHICH FREQUENCY <MH2> " ; F
100 PRINT" WHICH SPACING " • INPUT" .1 .15 .20 .25 .30 OF WAVE/L." ; S
110 IFS=.1ANDS>.15ANDS>.20ANDS>.25ANDS>.30THENPRINT"INVALID ENTRY":GOTO100
120 REM A=DRIVEN, D=DIRECTOR, R=REFLECTOR
130 IFS=.1THENA=474.5;D=465;R=560;H=15
140 IFS=.15THENA=472.5;D=460;R=520;H=20
150 IFS=.20THENA=470.5;D=452.5;R=490;H=30
160 IFS=.25THENA=468;D=442.5;R=468;H=48
170 IFS=.30THENA=467;D=435;R=435;H=60
180 A=A/F:D=F/R;F=ABS(X)/0.305
190 R1=A*X:D1=D*X
200 W=38000/F
210 W1=W*S/100
220 W2=W*S/100/0.305
230 PRINT"J"
240 PRINTTAB(12)"ELEMENT LENGTH":PRINT
250 PRINT" FOR":F;"MHZ. AND":S;"OF WAVE. SPACING"
260 FORI=1TO40:PRINT"-":NEXTI
270 PRINT" DRIVEN EL."
280 PRINTTAB(4)A;"FT OR";R1;"MT":PRINT
290 PRINT" DIRECTOR"
300 PRINTTAB(4)D;"FT OR";D1;"MT":PRINT
310 PRINT" REFLECTOR"
320 PRINTTAB(4)R;"FT OR";R1;"MT"
330 FORI=1TO40:PRINT"-":NEXTI
340 PRINT;"THE SPACING IS" ;W1;"MT"
350 PRINT;"RADIATION RESISTANCE IS APPROX.";H;"HOMS"
360 FORI=1TO40:PRINT"-":NEXTI
370 PRINT" WOULD YOU LIKE TO COMPUTE AGAIN? Y/ N"
390 GOTO5:IFA$=""THEN390
400 IFA$="Y"ANDA$=""THEN390
410 IFA$="Y"GOTO5
420 IFA$="N"THENPRINT"J":END
```
**On the lower frequency amateur bands, particularly 160 and 80 metres vertical polarisation is often desirable, but usually difficult and expensive to obtain.**

A large horizontal loop antenna is a good all band antenna but certainly lacks in vertical radiation at any height. To a considerable degree the stepped loop corrects this deficiency and this stepped design could also be applied with advantage to horizontal dipole types as well. For additional general information regarding the horizontal loop antenna see Amateur Radio, December 1984, but correct two measurements shown in the first column, 25 metres should be 18.2 metres and 112 metres should be 100 ohms and as the first column, 28 metres should be 18.2 metres.

The stepped loop is based on the idea that even a very short vertical section in a high current, high radiation portion of an antenna will give a considerable amount of vertically polarised signal. Actually, in any vertically polarised antenna there is not much point in keeping the low current, low radiation portion going straight up often at great expense. This is born out by T and L type antennas where keeping the low current, low radiation portion does not give much advantage. The loop will have a smaller enclosed area.

A large horizontal loop antenna is a good all band antenna and can be very useful when we consider loaded dipoles as well. For additional general information regarding the horizontal loop antenna see Amateur Radio, December 1984, but correct two measurements shown in the first column, 28 metres should be 18.2 metres.

The balanced system is probably preferable to a wave-length in space (no end effect). To a wave-length in space (no end effect). To a wave-length in space (no end effect).

The SWR will be much higher than with a 4:1 balun. As the poles form a square they are in the correct positions to support vertical sections and pole positions unchanged. Check not only the fundamental, nut also the harmonics of interest, prune for best average results.

There are a number of options regarding feeding the loop. An open wire or 50 ohm feeder can be used with a balanced ATU. A 4:1 balun can be located at the feed point and then a 50 ohm coaxial cable run to an ATU and the transceiver. Use a high power balun as the SWR may be fairly high on some bands.

The loop may be earthed at the mid-point of a balanced feeder system or at the mid-point of the vertical opposite the feed point. The above two methods give a balanced system but good results can also be obtained using unbalanced systems such as feeding the antenna with coaxial cable, the shield of which is earthed. The SWR may be higher but with a 4:1 balun but most ATUs will manage it quite well.

For simplicity sake tops of poles are not shown.
EMISSION MODES — What they mean

Everyone knows (or should know) what AM, FM, CW, SSB etc means, but now emission modes are listed as a series of numbers and letters.

A look at page 115 of the recent Call Book lists the emission modes for the amateur radio service in groups of mixed numbers and letters. At first glance, the codes appear to be very complicated, but on a closer study it is easy to understand. Each code group has either seven or nine digits.

- eg 6K00A2B, 4K00A3EKN, 36K0F3E, 11M0A3F3MN.

The first thing we need to do is to split the code groups into two or three sub-groups. The seven digit codes are split into two sub-groups, while the nine digit codes are split into three sub-groups.

- eg 6K00 A2B, 4K00 A3E KN

The first sub-group contains four digits — three numbers and one letter.

- eg 200H 6K00 6M2S.

This sub-group gives details of the bandwidth of the mode. The only letters used in the amateur service are H, K and M; which stand for Hertz, Kilohertz and Megahertz and occupies the position of the decimal place.

- eg 200H = 200 Hz, 6K00 = 6 kHz, 6M2S = 6.25MHz etc. (See Table 1 for full list).

The second sub-group contains three digits — two letters and one number.

- eg A1A A3E H3C J3C

The first digit, a letter determines the type of modulation of the carrier.

A = Amplitude modulated carrier — double sideband.

H = Amplitude modulated carrier — single sideband full carrier.

R = Amplitude modulated carrier — single sideband with reduced or variable level carrier.

J = Amplitude modulated carrier — single sideband with suppressed carrier.

B = Amplitude modulated carrier — independent sideband.

C = Amplitude modulated carrier — vestigial sideband.

F = Frequency modulated carrier — frequency modulation.

G = Angle modulated carrier — phase modulation.

P = Series of pulses — no modulation.

K = Series of pulses — modulation in amplitude.

L = Series of pulses — modulation in width/duration.

M = Series of pulses — modulated in position/phase.

TABLE 1 - SECOND SYMBOL: Type Of Signal Modulating the Main Carrier.

0 No modulating signal.

1 A single channel containing quantised or digital information without the use of as multiplexing.

2 A single channel containing quantised or digital information with the use of a modulating sub-carrier.

3 A single channel containing analogue information.

4 Two or more channels containing analogue information.

Table 4 includes a list of examples.

Example 1: 8K00A3E

Bandwidth = 6 kHz

A = Amplitude modulated carrier main carrier with double sidebands.

E = Single channel containing analogue information.

Therefore 8K00A3E = AM Voice Transmission with Bandwidth of 6 kHz.

Example 2: 36K0F3E

Bandwidth = 36 kHz

F = Frequency Modulated Carrier

E = Telephony

Therefore 8K00A3E = FM Transmission with Bandwidth of 36 kHz.

Example 3: 30M0F3FMN

Bandwidth = 30 MHz

F = Frequency Modulated Carrier

M = Monochrome (B & W)

E = Telephony

Therefore 30M0F3FMN = FM Black and White Television Signal with no multiplexing and Bandwidth of 30 MHz.

TABLE 1 — BANDWIDTH OF EMISSION

| Bandwidth | 200H = 200 Hz | 1K12 = 1.12 kHz | 2K00 = 2.00 kHz | 3K00 = 3.00 kHz | 4K00 = 4.00 kHz | 6K00 = 6.00 kHz | 8K00 = 8.00 kHz | 16K0 = 16.0 kHz | 36K0 = 36.0 kHz | 750K = 750 kHz | 6M2S = 6.25 MHz | 11M0 = 11.0 MHz | 30M0 = 30.0 MHz |
|-----------|---------------|-----------------|---------------|----------------|----------------|---------------|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|

TABLE 2 — FIRST SYMBOL: Type of Multiplexing

A = Modulated carrier — double sideband.

H = Amplitude modulated carrier — single sideband full carrier.

R = Amplitude modulated carrier — single sideband with reduced or variable level carrier.

J = Amplitude modulated carrier — single sideband with suppressed carrier.

TABLE 3 - SECOND SYMBOL: Type Of Signal

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type Of Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Amplitude modulated carrier</td>
</tr>
<tr>
<td>B</td>
<td>Amplitude modulated carrier — independent sideband.</td>
</tr>
<tr>
<td>C</td>
<td>Amplitude modulated carrier — vestigial sideband.</td>
</tr>
<tr>
<td>F</td>
<td>Frequency modulated carrier</td>
</tr>
<tr>
<td>G</td>
<td>Angle modulated carrier — phase modulation.</td>
</tr>
<tr>
<td>P</td>
<td>Series of pulses — no modulation.</td>
</tr>
<tr>
<td>K</td>
<td>Series of pulses — modulation in amplitude.</td>
</tr>
<tr>
<td>L</td>
<td>Series of pulses — modulation in width/duration.</td>
</tr>
<tr>
<td>M</td>
<td>Series of pulses — modulated in position/phase.</td>
</tr>
</tbody>
</table>

TABLE 4 — THIRD SYMBOL: Type of Information to be Transmitted.

A = Telegraphy — for aural reception.

B = Telegraphy — for automatic reception.

C = Facsimile.

D = Data transmission, telemetry, telecommand.

E = Telephony.

F = Television.

W = Combination of the above.

TABLE 5 — LAST SUB-GROUP: Additional Information.

KN Sound of commercial quality with the use of frequency inversion or band-splitting — with no multiplexing.

MN Monochrome (Television) — with no multiplexing.

NN Colour (Television) — with no multiplexing.

NOTE: The lists above only include mainly information pertaining to the amateur radio service.

Part of the technical editing of computer programs involves running the program. This has meant re-typing it from a listing supplied by the author. Many hours are spent by the editors entering the program, especially if, as does often occur, syntactical errors are introduced.

In future, to overcome this hold-up, alternative forms of program entry may be required, eg cassette, disk or via a modem. This will enable quick editing. If we do require the program in one of these alternative forms, we will provide the blank cassette, disc, etc or make the telephone call in the case of modems.

Finally, a word of advice. Computer programs on their own do not make good articles. Please include with any program a description of your algorithm. Articles are much more interesting when they include, not just a description of the how but also the why.
STABLE VFO WITH DIGITAL READ-OUT.

Morris has been very satisfied with his home-brewed VFO for a number of years and the February editorial inspired him to take the time to share it with the readers of Amateur Radio.

This design for a stable VFO is an old one, used by the writer for many years. It may not be as sophisticated as modern designs but it performs well and has been used for a long time at the head of a 16X multiplier for two metres with excellent long-term stability. The frequency readout is also old-fashioned by today's standards, but it has the advantage, in my case, of being built from junk-box components and thus cost virtually nothing.

The construction of a good VFO is a demanding bit of home-brewing, requiring more care and attention to detail than most other projects. Of course, the satisfaction resulting from a successful project is a great reward and has to be experienced to be believed.

DESIGN CONSIDERATIONS

Any VFO must be constructed according to a few basic principles in order to get maximum performance in terms of frequency stability and spectral purity. The following are a few points that will be found useful:

- The frequency determining elements of the oscillator must be kept as free as possible from variation due to thermal factors. In practice, this means avoiding ferrite cores, plastic capacitors and varactor tuning. PCBs should be single-sided and of high quality. Tuning capacitors are definitely not the place to economise, they should be the best available and made of Invar if possible, with ceramic insulation. Such capacitors are not easy to find but are worth searching for. The advertisements in British and US magazines are worth searching as a starting point. Coil formers should be ceramic and silver plated coils and capacitors from disposals sources are often of excellent quality.

- Mechanical rigidity is just as important. The VFO should be mounted in a sealed diecast box, preferably on a heavy chassis and with good quality drive mechanism.

- Possible from variation due to thermal effects. The active device/s should load the tuned circuit as little as possible and should be isolated from it also to avoid unpredictable detuning effects. The loaded Q of the frequency determining network must be as high as possible. Low L/C ratios can help here.

- The oscillator should be followed by one or more buffer stages in order to keep its operating conditions stable. These can be untuned but some form of bandpass characteristics is usually incorporated in the later stages at least.

- While digital frequency readout is an attractive feature, bear in mind that digital circuitry is a potent noise source. The readout logic should be in a well shielded case different from a separate source. If the VFO is being used for a sensitive receiver, it should be possible to turn off the digital circuitry while searching for very weak signals. The signal for the frequency counter should be taken from a point in the buffer chain as far as possible from the actual oscillator.

THE VFO CIRCUIT

This VFO was built to cover the range 7460 to 7571MHz. I used a disposals Command transmitter as the chassis as the Command's tuning circuitry includes most of the features mentioned above. The tuned circuit is in a sealed box and is connected by a short piece of heavy gauge copper wire to the oscillator circuit in another sealed box. The iron dust slug in the original coil has been removed but the padding and trimming capacitors retained to adjust the tuning range. A small N750 ceramic capacitor has been included with an aid to isolate it to the tuned circuit for fine adjustment of temperature drift. The VFO is battery operated and a couple of lantern size batteries last for over 100 hours.

The oscillator circuit has used the Franklin oscillator. This was quite popular in the days of valves as it is well suited to their input characteristics. I have found it to work well with transistors and have no reason to doubt its performance with FETs also. The circuit is basically a two stage amplifier with positive feedback arranged to include a loosely coupled tuned circuit. Although the circuit resembles a cross coupled astable, it will not work in this mode as the loop gain is too low. It is the Q of the tuning network that lifts the loop gain to the point of oscillation at the desired frequency only. In practice, the capacitors C1 and C2 should be of the same value and as low as possible consistent with sustained oscillation and reliable starting. I have found values of one or two pica-farad to be optimal and the amplifier gain can be adjusted by varying R1 (or with a pot) to suit. Because of the low loading of the tuned circuit, point X is at high impedance and should be treated accordingly.

I have always tended to use low impedance practice with transistorised Franklin oscillators mainly in order to swamp any variation in device characteristics. It also reduces the likelihood of parasitic oscillations. Oscillator output is taken from the intermediate coupling point via an emitter (or source) follower and then through a two-stage buffer. This arrangement is open to change to suit a particular need. The tank for the final stage is a small air wound coil in my VFO but a ferrite toroid would also be suitable here.

THE FREQUENCY COUNTER

Because the VFO is used with a multiplier, there is no point in measuring its output frequency directly. Output was taken from the final multiplier via a small loop and preamplifier and then fed to a divide by 100 prescaler. The counter proper is a straightforward design using TTL logic. The counter chain uses presettable counters in order to enter IF shifts for receive operation. The final half digit is counted with a JK flip-flop, the other FF in the package serving as a latch. Count time is 10 milliseconds and the data is then latched into...
was found to vary less than SHz over 12 hours warmed-up Hewlett Packard 524B counter and Th control section. The display updates at about crystal on 4.860MHz, which is the display. Timing is derived from a junk-box binoculars, and I must say that it is very sky. It was then at its best with the head a few degrees above the horizon and the three tails, yes definitely three, reaching up to the zenith. Further to the article Halley's Comet - will we see in Amateur Radio re Halley's Comet prompted me to write. From about 6th of April and onwards it has got weaker and much harder to locate contrary to expectations. The fourth letter is from Ray VK3RJ. Ray comments: ...I had the loan of a fairly good pair of binoculars from 18th to 27th April, but due to a frustrating sequence of overcast night skies, I was afraid I... have given to me by the kids and on this return of the Comet, it has come in handy. The Comet sighting was not a patch as a kid of seven years of age, the big awesome thing in the sky. This was at Clunes in Victoria. Of course, I am 82 years of age... The Comet sighting was not a patch as a kid of seven years of age, the big awesome thing in the sky. This was at Clunes in Victoria. Of course, I am 82 years of age... The fourth letter is from Ray VK3RJ. Ray comments: ...I had the loan of a fairly good pair of binoculars from 18th to 27th April, but due to a frustrating sequence of overcast night skies, I was afraid I was going to lose out. However, on 24th, the night sky was absolutely clear and enabled me to locate the constellation CORVUS and the Comet. I also had a splendid view of the eclipse of the moon... The Comet sighting was not a patch as a spectacle, on the sightings (four) I had witnessed with the naked eye as a boy of 10 years of age, from Maryborough (Victoria) in 1810. The Comet was then side-on and three times closer to the earth. "So, I have joined the fortunate minority who... have witnessed two orbits. "I was born on 30th January 1900." Thank you one and all for your contributions to my request and if someone reading this can assist Lindsay, it would be appreciated if they could contact him direct at his QTHR.
A slow response to a request for information about a ready made VFO and two recent articles in magazines prompted this writer to attempt to make his own.

A careful and detailed study of the relevant circuit diagrams of the FT-707 revealed the "trade secret of the external VFO switching, namely, the unmarked switch near the EXT VFO socket on the FT-707 connection diagram which is operated automatically when the EXT VFO plug is plugged in. This switch cannot be operated manually — it is operated only when the EXT VFO is plugged in for use. Unplug the EXT VFO and the transceiver reverts to single (internal) VFO operation only. (See Figure 5).

A study of the circuit diagram of the FV-107 (external VFO for the FT-107) revealed how the INT/EXT VFO, TX/RX, CLARIFIER, etc switching was carried out.

The VFO (5.0 to 5.5 MHz) circuit used is shown in Figure 1 and is virtually a copy of the internal VFO of the FT-707 — the only difference being the provision of the +8V for the switching via the INT/EXT switch to enable either the EXT VFO, or the INT VFO via a return to Pin 5 of the EXT VFO socket (this +8V is disconnected from Pin 5 when the "trade secret" switch operated).

The art work for the PCB, viewed from the component side, is shown actual size in Figure 2.

The component layout is shown in Figure 3. This layout and associated PCB is not critical and variations can be made to accommodate the different sizes and shapes of the components that come to hand.

The control circuitry is shown in Figure 4 and as stated above was adapted from the FV-107 circuit diagram.

The numerous capacitors of various types in the oscillator tuned circuit area may be questioned. However, although they are not absolutely necessary, they are there for some very good reasons, eg temperature compensation, frequency range, linearity, etc. The sum of these capacitors is variable from...
about 85pF to 105pF and with the coil having a value of 9.5/μH to 10.0/μH, the circuit can be made to tune the range 5.000 MHz to 5.500 MHz. Figure 6 shows the plot of Frequency versus Dial Degrees of the prototype, and although it is not exactly linear, it is reasonably close. Due to the capacitor and coil variations the usual adjustment of the trimmer capacitor and the ferrite slug must be carried out to achieve the desired coverage.

The operation of the external and internal VFOs with the FT-707 circuitry is shown in Figure 7.

**Parts List**

<table>
<thead>
<tr>
<th>Capacitors (pF)</th>
<th>Resistors (Ω)</th>
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<tr>
<td>1 8C1#</td>
<td>1 56R16</td>
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<td>1 8C7#</td>
<td>2 100 R9, 11</td>
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<td>1 12C3#</td>
<td>1 220 R7</td>
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<tr>
<td>1 16C4#</td>
<td>4 820 R12, 13, 14, 15</td>
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<tr>
<td>2 33C5*, 14</td>
<td>3 2k R5, 8, 17*</td>
</tr>
<tr>
<td>2 39C8, 18</td>
<td>1 2k R16*</td>
</tr>
<tr>
<td>1 180 C11</td>
<td>1 3k R2</td>
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<td>1 430 C13</td>
<td>1 9k R20*</td>
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<td>2 470 C21, 23</td>
<td>1 10k R1</td>
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<td>2 1n C2, 22</td>
<td>1 11k R19*</td>
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<td></td>
<td>1 22k R4</td>
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<tr>
<td></td>
<td>2 100k R6, 10</td>
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<tr>
<td></td>
<td>1 2k2 pot*</td>
</tr>
</tbody>
</table>

*Varicap*

15pF trimmer TC1

60pF trimmer TC2

15 x 15pF tuning VC1 + VC2

**Figure 4 — External VFO Socket Pin Numbers.**

**Figure 5 — Dial Reading.**

**Figure 6 — Dial Reading.**

**Figure 7 — Operation of the external and internal VFOs with the FT-707 circuitry is shown in Figure 7.**
Figure 7.

1 4k7 pot*
Semi-Conductors
1 2SK19GR (MPF 102, BC245, or similar FET)
2 2SC1815Y (BFX20, BC548, or similar NPN)
4 LEDs
Inductors
1 Osc Coil L1, 5mm ID x 25mm (361 0.5mm wire)
2 RFC 1.8μH L4, L5
3 RFC 250μH (not critical <390μH) L3, L6, L7
1 RFC 1μH L2
* — Value depends upon how much Clarifier action is required.
α — Temperature Coefficient chosen for frequency stability.
1 8-pin Yaesu Plug (for EXT VFO socket)

1 Metal Box (preferably cast-Aluminium)
1 Relay (2-pole change-over)
1 Switch (1-pole change-over)
2 Switch (2-pole change-over)
1 Slow-motion Dial
1 Knob for Clarifier control
Coaxial Cable, Cable, Wire, Tag Strips, etc.

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<td>SSB - CW - FM, 10W RF o/p, AC/DC (inc DC cable), most sensitive (0.15A, 70Ω)</td>
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<td>*When bought with FT726(R). Full 12 months warranty on our Yaesu.</td>
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<td>• HL-62V 10-60W 2m GaAsFET rx</td>
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<tr>
<td>• VQ2, 10m, 2 el, 1.8m boom. Only $79</td>
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AMATEUR RADIO, June 1986 - Page 15
With the question in our minds as to where to go for our forthcoming annual holidays, the thought occurred to my wife and I that maybe some far-flung green fields might be interesting. After all, it was many years since any extensive holiday had been undertaken, and some exotic overseas port seemed to be calling!

The VK2BPC Portable QRP Station.

After initial inquiries at the local tourist bureau, we quickly came to the realisation, that with the state of the Australian Dollar, it was almost prohibitive for the average family with three children to travel overseas and still live in peace with ones bank manager.

The alternatives didn’t seem to have the same glamour about them until Norfolk Island came into the conversation. After all, it had been almost 15 years since we had been there and the children had never been. Another benefit was the fact that it was a domestic flight, which would make it cheaper for family travel. It was also my wife’s homeland of childhood days so it would be interesting to catch up with all the relatives, friends and acquaintances, and see how things had changed since 1971. There was also one other thing (for me as a keen amateur) to help friends and acquaintances, and see how things were carrying luggage for five? Well, after much deliberation, it was finally decided that any fool could work the world with 100 watts plus and a VK9-prefix, so why not do it the hard way on QRR — the DX location!

So, the location has been decided, enter the next problem. How do you decide what to take on an aircraft in the form of radio equipment, when carrying luggage for five? Well, after much deliberation, it was finally decided that any fool could work the world with 100 watts plus and a VK9-prefix, so why not do it the hard way on QRR? With loving care the trusty little 10 watts, SS106S was packed, along with a 40 metre dipole, ATU, desk microphone, CW key, six amp power supply and sundry bits and pieces.

Just two and a half hours out of Sydney on a comfortable Fokker F28 jet (a far cry from the five hour flight on the old DC4 Skymaster), we were preparing for touch-down onto the familiar volcanic soil once again, whilst attempting to show the children some landmarks we recognised.

Once through Customs we were met by Uncle-in-law, who whisked family and luggage away in an old Volvo, to our shack which would be home for the next four weeks. Of course, in true amateur spirit) upon entering the drive-way, I couldn’t help surveying the local flora in an effort to gauge the height of the Norfolk Island Pines surrounding the house. One little beauty just outside the shack window that rose to about a height of about 25 metres could most surely be the hanger for the 40 metre dipole — but that would have to wait until we had been to the local shop to stock up the larder: even amateurs have to eat!

There had been some speculation from amateur friends back at my home QTH as to how long it would take for me to get on air. Well, on arriving back from the shop it was straight to the most important business and up the tree, to hang the centre of the dipole at about 18 metres and form it into an inverted vee. (If you like climbing trees I can certainly recommend the Norfolk Pine! It seems to have been designed specifically with amateurs in mind, as its branches are spaced just right for climbing, and it is very sturdy, into the bargain, which allows little or no swaying in the breeze).

Once inside the shack again with the gear ready to switch on, I thought I would try 15 metres as it was about the right time of day. Upon tuning around the band, the familiar sound of JAs and the more interesting parts of the trip was meeting the DX-chasers, particularly when he and John VK9JA were working two different bands — Bob on a TS200S and 20 metres, whilst John was on a TS330S and linear on 40 metres, downstairs in the garage. The linear was a home-brew variety, made by Bob, a most professional looking piece of equipment and a real credit to its creator.

The time spent with Les VK9NI and his wife Jean was working well and reports on 15 metres were 5X3 to 5X7 — not too bad for low power, but a quick burst on 40 metres soon confirmed that I might make a contact back home on my first night — which did happen.

Of course, the trip was not all amateur as the family had to be considered too, so the DX work was confined mainly to the evenings when we were not going visiting, etc. As well as our own luggage, we were persuaded to take about 10 kg of QSL cards by the VK2 QSL Bureau, and one of the more interesting parts of the trip was meeting the recipients of these cards. Memories will long remain of the time spent with Bob VK9ND, Les VK9NI, John VK9JA, John VK9NJ, and all their wives. VK9NJ may be better known as VK2ANG, as John and his wife had decided to spend a holiday there at the same time as we had.

The shack of Bob VK9ND, was very popular with the DX-chasers, particularly when he and John VK9JA were working two different bands — Bob on a TS200S and 20 metres, whilst John was on a TS330S and linear on 40 metres, downstairs in the garage. The linear was a home-brew variety, made by Bob, a most professional looking piece of equipment and a real credit to its creator.

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This Ionospheric Receiving Station is one in the Australian Network and is located on Norfolk Island.

John admits to not being very active these days, but he can be heard each day at 2100 UTC, 14.315 MHz, on the Maritime Mobile Net, giving much appreciated weather details to the many yachtsmen who call in. John's time is mostly taken up with his two electronics shops, and showing films on the history of Norfolk and Pitcairn to the tourists, not to mention his activity with the Norfolk wildlife conservation program.

Being the VK2 QSL Bureau Manager gave me cause to discuss the problems faced by our VK9 friends with the constant flow of cards that make their way to them. We have to realize that these people are in a very sought-after DX location, and that we must not expect a return card to a VK2 or VK3 etc., without making arrangements during the QSO.

Unfortunately, Jim and Kirsty, VK9NS and VK9NL, were away in New Guinea at the time of our holiday so we were not able to meet this time — hopefully next time!

With so many places to see and so many people to meet, it certainly didn't take long for the four weeks to pass, but I did manage to visit the local radio station. Broadcasting takes place from a short studio, not far from the main shopping area and goes to air on 93.900 MHz FM and 1.566 MHz AM (although the AM broadcast was temporarily suspended whilst a new AM stereo transmitter was being installed). This was of great interest to me as the Westlakes Amateur Radio Club, of which I am a member, was the first amateur radio club to become involved in an application for a community radio station licence.

Well, could I recommend a holiday on the magnificent island to a DX chaser? The answer is most definitely yes as not only will you have a great time on-air, but you will also meet a lot of interesting and friendly people and be able to catch up on a lot of Australian and Norfolk history. You may even find an odd bargain with the duty-free shopping!

With the holiday finished, a quick tally of the log indicated that 31 countries were worked, which was not bad for low power, dipole and spasmodic operation on 40 and 15 metres during a propagation low. Probably the VK9N had something to do with it!

Of just as much interest as the DX to me though were the regular scheds to my many amateur friends back home who were enduring the hot Australian summer across the water.

From left: Bob VK9ND, Phil VK2BPC and John VK9NJ. Bob's new home-brew linear and power supply feature in the centre of the photograph, with the dummy load at the bottom centre.

The VL2NI Broadcast Studio with Kathy Lecren at the Controls.

ONLY NATIONAL UHF NETWORK

On 16th March 1986, SBS-TV became Australia's first national UHF television network, which opened a new chapter of broadcasting in this country.

The date marked the network's expansion to Perth and Hobart, via AUSSAT, making SBS-TV accessible in all capital cities except Darwin. The signal will be transmitted across the metropolitan area in both cities on UHF from a transmitter atop Mount Wellington in Hobart, and Mount Bickley in Perth. All programs will originate from Sydney.

It also launched a new line-up of programs including award-winning international films, excellent series and major new local productions.

Viewers in all areas have access to the network's Sydney studios via a national toll-free telephone number (008) 22 6322, costing only a local call fee.
Some may think amateur radio a strange hobby for a grown man, as it must surely be easier to talk to friends over the telephone instead of twiddling all those knobs and things, but there must be something to it as son follows father into the hobby.

I guess I first became interested in amateur radio about six years ago. Whilst visiting my father, George Humphrey VK2NO, one winter afternoon, he asked me to climb onto the roof of the house and snip a quarter of an inch off each end of a piece of wire, called of all things, a Dipole. He explained that this would eventually reduce his SWR down to One to One on the meter in The Shack. It seemed like a simple job and, although a stiff! August westerly wind was blowing, it would only take a minute or two to finish.

During the next half-hour, alone in the wind on the roof, interrupted only by Dad calling out from the projection room and of the antenna, mate, it's still a bit high! — I got to wondering "what the devil is a Dipole, an SWR, what is the complicated mathematical equation of One to One, and why does he insist on calling the third bedroom The Shack." I recalled thinking some 30 years ago, as a teenager during one of Dad's on-air sessions, that amateur radio was a strange hobby for a grown man and why didn't he just speak to his friends over the telephone instead of fiddling around with all that equipment and twisting all those knobs. This line of thought was interrupted by Dad calling out, "Come on down, mate, it's still a bit high!"

So, when I descended from the roof (after clipping little bits of copper wire from a thing that looked like an old-fashioned clothes-line), I entered the third bedroom — sorry, the shack — and of the Dipole. Dad then explained that I couldn't do without a trace of the cold wind which had been my companion on the roof. I asked Dad to explain to me what enjoyment amateur radio gave him and why hadn't he become bored with a hobby that he had been active in since 1929.

Over the next hour or so, I very slowly began to understand a little of the enjoyment he derived from his hobby and the meaning of words like Dipole, SWR, and One to One — the spark of interest was ignited. As the days went by other terms were explained like Wave Lengths, Ground Plane, Yagi, Capacitor, Diode, QSO, OSL, DX, CW, RTTY, AM, FM and SSB.

I sat in the shack and listened with a new interest to Dad talk to friends he had had for over 50 years and to those new friends that had only just gained their licence. It was Dad's duty to pass his knowledge on to me, and I joined them and listened when they were second operators talking to distant friends in a Net — and my interest was becoming very keen.

Dad said, "I'll hand it over to your second operator." I had a quick look around the shack, there was only Dad and I there — Gee, I'd love to have a talk, I thought! When I positioned myself in front of the microphone I discovered another new phrase — Mic Fright. My mouth became as dry as the Simpson Desert at drought time, with the words at first stumbling out at a very slow, uncertain rate and then building up to a rate that a race caller would have had trouble trying to decipher. I am sure the other amateur would not have understood a word I said. But when I handed it over to him, it gave Dad the time needed to settle me down and give me the confidence I needed and also when I asked him how difficult it was to pass the examinations — "Easy," he said, "Just a bit of study and you're in like Flynn" — (not all amateurs tell the truth ALL the time).

Based on this, Dad started studying for the Morse exam on the day I had passed the Novice exam. He did not get the AOCP theory examination, and on reading the various theory books, it looked like The Impossible Dream. However, Dad reminded me of how the QSO had told me over a year ago and the AOCP examination was two or three hours study every day for only a year I managed to gain the AOCP with a new call VK2END. I was very happy and relieved, but Dad was even more jubilant than when he had gained Novice status. Again, my first QSO with my own call sign is something you can never forget.

I had also managed to pass the 10 WPM Morse exam on the day I had passed the AOCP. Dad then decided to see if he could pass the AOCP theory examination, and on reading the various theory books, it looked like The Impossible Dream. However, Dad reminded me of how the QSO had told me over a year ago and the AOCP examination was two or three hours study every day for only a year I managed to gain the AOCP with a new call VK2END. I was very happy and relieved, but Dad was even more jubilant than when he had gained Novice status. Again, my first QSO with my own call sign is something you can never forget.

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Oaks VK2FA a breaker, who had hastily set-up his rig at the Riverina Advanced College of Education, asked if he could introduce a special visitor. The visitor happened to be HRH Prince Philip, The Duke of Edinburgh, who was visiting the college to present awards, and as his interest in radio is well-known, an amateur stall was set-up for him. Dad recalled, "We had quite a chat with the Duke, he was very keen on the history of amateur radio in Australia and passed on his good wishes through Horrie and myself to operators in this country."

On another occasion, also reported in the press, during a Telecom industrial dispute, the Royal Hobart Hospital was unable to contact the Medical Application Centre, in Gladesville, Sydney, for spare parts for a Gamma camera used in the Nuclear Medical Department. A faulty relay switch made the unit unserviceable and as a result of the dispute telegrams and a telex did not arrive. A strong signal from VK0NO was heard by Mr Allen O'Halloran, the Head Technician of the Hospital, who was also an amateur, VK7OH. After permission to help from the various authorities was granted, a section of the 20 metre band was kept open by other amateurs until contact was made with the centre at Gladesville and the spare part was sent, post haste, via Mascot, and in a short time the Gamma camera was back in operation.

About this time I went, as Dad put it, "Son, the first licence I held was restricted to working CW only for six or 12 months and, at the end of that time, after the PMG's Department sighted my log, I was allowed to use phone. That afternoon I borrowed a row boat from a fisherman friend at Mosman Bay and rowed out into the middle of the bay and hoisted the Morse Key to the bottom where it belonged — but if ever I do decide to take up brass pouting again, and need a key in a hurry, I know exactly where I put it!""

During last year, Dad introduced me to two metres and we enjoyed many QSOs while I was mobile at work and I met many of his mates who were restricted to these particular frequencies. It is a whole different style of amateur radio, but just as enjoyable.

On 18th March 1986, my Dad, George Humphrey VK2NO, went Silent Key, I know I will surely miss him and I know his friends will too. I hope to keep Dad's call sign active and Keep the Flag Flying in honour of both Dad and Don.

Steve Mahony VK5AIM
19 Kentish Road, Elizabeth Downs, SA. 5113

**MOBILE MOUNTING BRACKET FOR A HAND-HELD TRANSCEIVER IN A VEHICLE**

Having purchased a two-metre FM hand-held transceiver, and used it in the car I decided some form of Mounting Bracket was required. An inspection of an electronics brochure showed such a bracket was available. Further investigation at the local electronics store revealed a plastic variety which was deemed to cost more than it was worth.

A little thinking and a few practice cuts and bends with a piece of cardboard from a cereal packet, soon indicated the necessary shape.

The final bracket was made from a piece of brown covered Marvplate which matched the vehicle trim admirably.

The strip of metal is 220 mm long by 78 mm wide (or cut to suit a particular unit's dimensions). It is necessary for the curve of the top hook to match the internal contours of the car door — see photographs.

The bracket slips down between the window. The top bar accommodates the belt-clip of the hand-held whilst the bottom one steadies the unit.

Line the back of the metal with a piece of thin foam plastic to protect the door panel. The top bar is made of ½ inch (3 mm) diameter brazing rod, threaded with a ½ inch (3 mm) Whitworth thread, to secure the nuts for holding the rod in place. The width of this bar is adapted to suit the belt-clip of the hand-held.

The lower support bar is also ½ inch brazing rod prepared in a similar manner to the above one. This bar is made to fit the hand-held. It only stops the unit from moving around and the microphone can hang on it when not in use.

Around the city and suburbs the rubber-ducky antenna is quite satisfactory to access the local repeater, but if your location is a bit noisy, a quarter-wave Gutter Grip antenna or a small length of coaxial cable should improve signals.

A word of warning . . . Do not leave your vehicle in a public car park unlocked or with the window wound down or you will not have a hand-held . . . and the local repeater may have an extra user! Unclip the unit and take it with you. I am delighted with my hand-held and take it everywhere with me.

Whilst we may not be able to home-brew equipment to the latest piece of professional amateur technology, there are many little pieces of ancilllary gear and accessories that the amateur can build and have the satisfaction of saying that "I made that myself!"

**SINGLE CHIP MODEM**

The first single chip modem for 1200 bps full-duplex transmission has been introduced by the Linear Division of Fairchild.

The µA212A modem performs all signal processing functions required for a Bell 212A/103 compatible modem. It incorporates an on-chip switched capacitor modulator, digital coherent demodulator, switched capacitor filters, 3.6864 MHz crystal oscillator and certain control and self-test functions.

To form a complete system, the unit requires only a general-purpose single-chip microcomputer and simple I/O interface, handshaking protocols and mode control functions and minimal external circuitry to handle the RS232C interface, ring detection, telephone line interface and power supplies.

For voice/data terminals, where high reliability and space savings are critical, the µA212A provides the first single-chip upgrade path from one-chip 103-type 300 bps modems.

It is capable of accommodating both high and low-speed data rates, and incorporates a novel switched capacitor modulator and digital coherent demodulator for 1200 bps QPSK operation, and a separate digital FSK modulator and demodulator for rates of 0-300 bps.

For example, in the high-speed asynchronous mode, transmit data from the DTE enters the µA212A, is processed by the single chip modem and sent to the remote terminal through the public switched network. The received signal is demodulated, and the serial data stream is passed to the DCE ready for further processing.

**From Australian Electronics News, March 1984**

Steve Mahony VK5AIM
19 Kentish Road, Elizabeth Downs, SA. 5113

**OSP**

**QSP**

**AMATEUR RADIO. June 1986 - Page 19**
"When Morsing, Remember the Human Factor"

Written by Jack Hum GSUM and reprinted from The Shortwave Magazine, February 1986

Smarting somewhat from the sensation produced at a previous meeting — quite unwittingly — by that quiet American, Cyrus B Clickmeister, about how telegraphy was used Stateside, the club members assembled in critical mood for "The Annual Inquest." Not much cadaverous as it sounded from its title, "The Annual Inquest" was the meeting of the year when the Club looked back on its performance in The Great Annual Transmitting Contest, decided what went wrong (if anything), what went right (If anything) and How to Do Better Next Time.

Mister Chairperson set the tempo of the meeting when, recalling That Contest, he said that although the weather was good, the food was good, the logging was good, and the equipment good (for most operators, even if some felt there were too many confusing bells and whistles on the frontal panel), there was one area which was not good: "Our telegraphy performance was lamentable, and I'd like to ask what you all think can be done about it well ahead of next time."

To the surprise of all, The Man at the Club spoke up at once to say quite forthrightly: "What can be done about it? Why, refrain from entering at all next year. Telegraphy is an outmoded form of communication anyway."

Coming from one known to have served twenty years as a seagoing operator this observation was received with what is sometimes called a stunned silence. Then, from an atomic cloud of tobacco smoke at the rear of the room emerged the quiet voice of Highly Technical Gent:

"With respect, TMC, I think that remark of yours to be defeatist, to say the least. I speak years as a seagoing operator this observation was done about it? Why, refrain from entering at all next year. Telegraphy is an outmoded form of communication anyway."

"Remember with CW you are putting all of your facility solely to speed the day when they could get away from those boring omni-directional QSOs on "Two" and instead talk to the world on alchett-phone. "If you believe they want to mug up the Morse to talk to each other on 'Two' you'll learn how to do this if we have that local CW contest suggested by TMC. Then we'll stand a chance in next year's Great Annual. That's enough for me."

"We're Cyrus B Clickmeister here this night!" murmured Mister Moneybags as they all trooped out to the tea bar.

**GasFET LOW-NOISE AMPLIFYING MODULE**

Mitsubishi Electric have developed a gallium arsenide field-effect transistor (FET) for low-noise amplifying modules, which features high gain, for use in satellite broadcast receivers. Satellite information systems require high performance waveforms, transmission intelligence and high gain, and the performance of such receivers depends on GasFET amplifiers.

In developing the amplifying module, Mitsubishi Electric succeeded in integrating discrete devices into a hybrid IC by using a thick-film ceramic substrate. This has made it possible to manufacture low-noise, high gain receivers for business communications and direct satellite broadcast systems.

Adapted from Australian Electronic News, March 1986

**ZERO DEFECTS**

A zero defects warranty, which was implemented in August 1985, has now been extended to cover all integrated circuits produced world-wide by the Philips group of companies.

Under the terms of the warranty any customer who finds a single defect in a batch will be able to return the entire batch for re-screening or replacement.

The warranty applies to all standard-function ICs. The warranty is valid for one year from the date the customer receives the components. Customers will have 30 days in which to report a defective batch.

This warranty means that Philips standard is not 500, 200, or 50 parts per million, but zero.

Adapted from Australian Electronic News, March 1986.
INVENTORY OF VIDEO TRANSMITTER VENDOR SEIZED

On 16th January, agents of the FCC, the US Marshal and the FBI served a search and seizure warrant on a company in Las Vegas, Nevada. Several thousand dollars' worth of suspected illegal electronic devices and accompanying shipping receipts were removed from the facility.

The warrants were based on evidence developed by FCC that indicated that the company had continued to illegally market electronic devices after having received several warnings from the FCC.

The specific devices, marketed under the brand name of TV Genie, were designed to transmit video programming from equipment such as video tape recorders and video cameras to television receivers. The transmitters were being marketed by mail order through advertisements placed in several electronics-oriented consumer publications. In addition to the marketing of such equipment being illegal, use of these low power television transmitters constitutes unlicensed operation and subjects the user to severe penalties. Despite claims to the contrary by some manufacturers, none of the low power television transmitters may be legally sold or used in the US, regardless of the transmitted power.

From The ARRL Letter, 13th February 1986

ARMCHAIR PUNTERS GET VIABET

High technology now allows anyone wishing to bet on the TAB in Western Australia to do so from the comfort of their living rooms. The TAB has linked up with Telecom's Viatel computerised information network to provide what is called a "Viabet" service for home use.

Viatel is a computer-based information retrieval system, which can be switched through to a normal domestic television set.

It was already available for use in 12,000 Australian offices and homes, and the TAB in WA hope it will have 600 regular Viabet users within the next few months.
There is no apology for repeating them now in the Jamboree.

thing worthwhile from their association with JOTA.
stress that both sides must work at it.
or the other side, or both, did not work at it, and I never regretted.
JOTA, they are giving Scouts and Guides a rare study group. The result of this study group was and due to the good grace of a friendly local radio group to seek a further hobby in amateur radio, through that association prompted seven of my experience, particularly at an international level.

When I became involved in JOTA with my group in 1958, the interest engendered in amateur radio

At the very beginning of JOTA, both the founder, Noel Lynch VK4BNL, and the Scout World JOTA Organiser, Len Jarrett VE3MYF, were well aware that the operators would need help to ensure that both parties really achieved something worthwhile from their association with JOTA. There is no apology for repeating them now in the Jamboree.

After a very long association with Jamboree on the Air (JOTA) — in fact, since its inception in 1958, and at both Scouting and amateur radio levels, I sincerely believe that JOTA can be fun for both amateur operators and the Scout and Guide Leaders. I regard many other facets of our hobby, eg DX, Contests, or in fact any other contact, it has to be worked at to make it a success. Things just don't happen! It is particularly so with JOTA, because in this instance we are involved with others — the Scouts, Guides and their Leaders — who are as unfamiliar with amateur radio activities as we are with theirs. It is very important to both parties that we really get-together to ensure its success, and provide enjoyment for both sides in this very wonderful national and international experience.

I have personally had a long association with JOTA in both areas, Scouting and amateur radio. In fact, it was thanks to JOTA that I gained my first amateur licence in 1958. It was a special JOTA in 1958 and in that year and the following two years, was a Scout Group Organiser for JOTA.

It was an honour, in 1961, to be asked by the State Scout Association to accept the appointment as Branch (State) Organiser for JOTA in Queensland, and again in 1964 being appointed Organiser for JOTA at National Scout Headquarters level. This latter appointment was held continuously until my retirement in 1984. (My predecessor, Commissioner Peter Hughes BV, has also been involved with JOTA since its inception).

Jamboree on the Air gives Scouts and Guides an opportunity to make friends at an Australian international level, a chance that would normally be possible unless they attended a national or overseas activity. Such activities are normally only held once every three years, in the case of a National Jamboree, or perhaps at an even greater interval in the case of a World Jamboree. In the present financial climate it would be impossible to offer the opportunity to that part of Scouts and Guides who get the chance to experience, particularly at an international level.

By amateurs volunteering their services for JOTA, they are giving Scouts and Guides a rare and unique opportunity and many may be interested to know that many friendships made during JOTA endure over the succeeding years. A couple of practice sessions with the written law during JOTA 1970, still maintains regular correspondence to this day.

There are other spin-offs as a result of JOTA. Like many other Scouts, Guides and Leaders, I became an operator through contact with JOTA. When I became involved in JOTA with my group in 1958, the interest engendered in amateur radio, that association prompted seven of my group is confirmed at least one month prior to JOTA.

It could be advantageous to both sides to inform the Leader that in the interests of JOTA, you could welcome the opportunity made with a group is confirmed at least one month prior to JOTA.

Stress that during JOTA, a Leader must be in attendance and this is at all times. This should be made very clear as it is not the intention of either the Scout or Guide movements that operators that during JOTA should be acting as sitters. If at the operator's own shack the groups should be kept as small as you stipulate, with rostering for other periods to be arranged by the Leader with rostered groups tuning up only at the pre-arranged times. The Leader should ensure this, especially by his own presence at all times.

While initially the approach might be expected by the amateur from the Scout or Guide Leader, any Scout or Guide group not knowing how to make the initial contact would certainly welcome one from an amateur operator. Ensure, though, that any arrangement made with a group is confirmed at least one month prior to JOTA.

Alternatively, an inquiry to the National Coordinator JOTA, Commissioner Peter Hughes BV, who may be of further assistance to you in matters relating to JOTA. A letter to your local Division, or to the State Branch Organiser JOTA, c/- of the address for Scout Headquarters in your State or as per the Telephone Book, should bring an immediate response to any queries you may have.

In your particular State, the Scout Branch Organiser and Guide Liaisons have a Wireless Inspector of Australia. And the Liaison who may be of further assistance to you in matters relating to JOTA. To a letter to your local Division, or to the State Branch Organiser JOTA, c/- of the address for Scout Headquarters in your State or as per the Telephone Book, should bring an immediate response to any queries you may have.

Finally, good operators ensure that any spare equipment in the shack not actually in use has microphones disconnected while the main operator is on the air. As a final reminder, please note that during the National Opening Ceremony from Canberra on Saturday 18th October, commencing at 0400 UTC on that date will be deeply appreciated by all concerned with the Ceremony.

Photograph of the Story of the Enright, Rea in Pictures

Lord Baden Powell, founder of the Scouting Movement.

Noel Lynch VK4BNL

15 Noeline Street, Dorrington, Qld. 4060

YES! — Jamboree on the Air Can Be Fun
HAVE YOU CAUGHT THE JUBILEE INDUSTRY TRADE TRAIN?

The Jubilee Industry Trade Train has been out there in VK5-land, just waiting for your next call.

Since 16th March 1986, this train has been busy touring country centres around South Australia. On the train are displays and demonstrations from 30 South Australian companies. Amateur radio communications are also aboard. (The previous look-a-like travelling rail show-case of commerce took place 35 years ago.)

South Australia's birthday appears to be an opportune time to re-introduce the Trade Train in keeping with the celebrations which are happening in South Australia. By the time the train returns to Adelaide from 5th-9th June, the quarter of a kilometre long train will have travelled in excess of 4000 km of railway networks during the three-month long program. The Industry Trade Train is one of many major Jubilee 150 projects for 1986, organised by the Industry Executive Committee of the Jubilee 150 Board.

South Australian companies and organisations representing most of the State's major employers and prominent small businesses have taken the opportunity of the 150th celebrations to show as many South Australians as possible the showcase of industrial expertise, innovations and achievements.

The train is based on a series of exciting displays and demonstrations housed in special exhibition cars and visitors are able to look and learn, touch and try. However, the action has not all be on the tracks. Platforms and the surrounding areas will form part of the Trade Train display, adding the fun of the fair-ground.

Community groups were invited to arrange displays and promotions covering local and district industry, commerce and history. There is also a craft exhibition, sideshows, and a wide range of souvenirs and refreshments — something for all the family.

Local Jubilee 150 Committees, Service Clubs and other community groups also organised activities to coincide with the train's visit. These displays and promotions covering local and district industry, commerce and history. There is also a craft exhibition, sideshows, and a wide range of souvenirs and refreshments — something for all the family.

Local Jubilee 150 Committees, Service Clubs and other community groups also organised activities to coincide with the train's visit. These activities to coincide with the train's visit. These activities included historical re-enactments, period costume balls, poster competitions, foot and bicycle races, trade fairs, carnivals and street parades.

The WIA (SA Division) and South Australian amateurs were quick to realise the promotional possibilities both for the hobby itself as well as provide support input to the Jubilee 150 project by way of amateur communications. The opportunity to give publicity outside South Australia and overseas to the train activity and therefore involvement of amateur radio on the train was automatically given the green-light by the train's executive officer, Mr Andre Wilcox and his Committee.

Once again South Australian amateurs have taken to the rails, but with a slight difference. This time volunteer groups from the city and country areas have combined to work from the stationary station on board the train in each of 20 different country locations including Adelaide at the beginning and the end of the journey. These amateurs, by their involvement, are sharing this Jubilee activity with amateurs in Australia and overseas.

The amateur station is situated in a brake-van in Carriage 8, Space F in the middle of the train. This is ideally situated as a communications centre with a static display of amateur radio materials and information for the visitors to the amateur base station. The display has been professionally accomplished again by Peter Koen, whose contribution to the promotion of the hobby has been greatly appreciated.

At each of the designated whistle stops, a fresh team of amateurs take-over — similar to an amateur radio marathon relay. The onboard shack is supplied with quality power from generator cars, with mains power used as a backup at each stop-over, if necessary. Two metre operation is optional, depending upon proximity and the use of repeaters whilst HF operation is equipment provided and worked by amateurs at each location.

The Jubilee call sign, VK5JSA/Trade Train offers further points for the Jubilee 150 Award. For those interested in the Jubilee Award, the Trade Train is a new activity and is worth 15 points for the initial contact for each of the bands the station is worked. An additional five points can be claimed for the Award for each country location that the train is worked. Club and operator call signs activated from the train offer additional points.

A special, one-off, one contact QSL card for the Trade Train Award can be sent to the WIA (SA), Box 1234, Adelaide, SA 5001, (marked Trade Train Award) for 82 packaging and mailing. This Award had become quite popular to follow on from the Cape Willoughby, Kangaroo Island Jubilee 150 Award.

The train will be in Broken Hill on 29th-31st May and in Adelaide from 5th-9th June. Frequencies operated are 28.470, 21.186, 14.186, 7.086 and 3.586 MHz. The prime net frequency is 3.586 MHz and repeats every Tuesday, Friday and Sunday at 1000 UTC.

Several further activities are planned for the Jubilee 150 Year including Rail Mobile from Adelaide to Alice Springs and return in June, the City of Marion Centenary Celebration and special activity for the Grand Prix in October.

HAVE YOU CAUGHT THE JUBILEE INDUSTRY TRADE TRAIN?
Most solid-state transceivers require a load of nominally 50 ohms for correct operation. If the antenna presents an impedance which departs too greatly from this value, circuitry which monitors the SWR (in most transceivers) will cause the drive power to decrease in an attempt to protect the output amplifier. For a coaxial fed antenna, line losses will also increase in proportion to the degree of mismatch. The connection of an antenna coupler or tuning unit between the radio and antenna will probably permit the output amplifier to see a 50 ohm load, but beyond the coupler, towards the antenna, the degree of mismatch and resultant high SWR will be unaltered, so line loss will remain. The amount of loss will depend on the quality of the coaxial cable.

One of the most popular all-band antennas for many years has been the horizontal or inverted-vee wire, fed with low-loss open wire feeders. The reason for the popularity is easy to explain. Just about any length wire — as small as one-quarter wave-length long on the lowest band, will yield reasonable results, and of course the wire should be located as high and in the clear as is reasonably possible. The author has used various forms of this antenna, the smallest being only 15 metres of radiating portion and six metres in height, to the present configuration which is 41 metres and 13 metres respectively. Two systems which are shown in Figure 1, and the table shows some more dimensions that should prove satisfactory. See also References 1 and 2. The trade-off between radiating portion A and feedline F is not critical. However, aim for as much wire in A as is readily possible consistent with A + F.

Ordinary electrician's earth wire is ideal for the radiating portion, and the feedline if homemade open wire feeders are planned. Figure 2 shows the most commonly available feedline options. The insulators for the ends and feed connection point should be porcelain or glass dog-bone type with long leakage path. Avoid the ordinary egg type. If an inverted-vee configuration is used, three such insulators should be employed. See Figure 3. Note that the strain must be relieved from the feedline connection by passing these wires through the holes of the insulators, as shown.

As an alternative to the insulators mentioned above, teflon rod, about 1.5 cm diameter can be obtained from electrical insulation wholesalers. Sufficient stock to make three or five insulators of about 7 cm each will be required.

**ANTENNA**

The top radiating portion of the antenna may be just about any convenient length that may be fitted into the physical boundaries of the property. It may be flat-top or inverted-vee or even vee in plan and elevation, and of course the wire should be located as high and in the clear as is reasonably possible. The author has used various forms of this antenna, the smallest being only 15 metres of radiating portion and six metres in height, to the present configuration which is 41 metres and 13 metres respectively. Two systems which are shown in Figure 1, and the table shows some more dimensions that should prove satisfactory. See also References 1 and 2. The trade-off between radiating portion A and feedline F is not critical. However, aim for as much wire in A as is readily possible consistent with A + F.

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Figure 2.

By experimenting with the position of the taps for $C_1$, the antenna connections, and adjustment of $C_1$, band noise will be maximised to a point where no further adjustment causes a worthwhile increase in noise or signal levels. It will be found that near maximum $C$ will be required at $C_2$, so this may be set at full mesh for starters. Now, on a clear channel, apply a bit of carrier from the radio and observe the SWR reading. It should be possible to bring the reflected reading down to a small value with adjustment of $C_1$ and $C_2$. If a reading of near zero cannot be obtained, switch off carrier and try moving either the capacitor or antenna taps closer to, or further from the centre of the coil. Do not touch the coil or feedline whilst carrier is applied! When the ideal or best positions are found, record them. Remember that the antenna and coupler are symmetrical, so the capacitor and antenna taps must be positioned an equal number of turns from the centre, with the antenna taps always closer to the centre than the capacitor taps. If you are unlucky enough to have a feedline length that will just not allow

Figure 3.

Poly robe — the kind used by yachtsmen, may be used for the halyards, but it is very expensive, and deteriorates in just a few years of weathering. A cheaper and more lasting alternative is the green plastic covered steel clothes line wire sold in lengths at hardware shops.

Figure 4.

Poly robe — the kind used by yachtsmen, may be used for the halyards, but it is very expensive, and deteriorates in just a few years of weathering. A cheaper and more lasting alternative is the green plastic covered steel clothes line wire sold in lengths at hardware shops.

Figure 5.

TUNER

The circuit of the suggested tuner is shown in Figure 1. Variable capacitors of any kind have become very hard to obtain now, and to my knowledge, all production has stopped in this country. People who have been in radio for some years always seem to have a few going spare. If you know such a person, I can only suggest that they be approached for a donation. The coil is a factory-made one, available from William Willis & Co Pty Ltd, of Canterbury, Victoria.

To reduce the possibility of electric shock, the tuner components should be housed in some sort of enclosure. For simplicity and ease of construction, a wooden box is suggested. See Figures 4 and 5. This method allows us to mount the coil upon discs of wood glued to the front and rear panels without incurring eddy current losses as would be the case with a metal enclosure. Note that a strip of metal runs beneath the two variable capacitors to form a continuous ground connection between these and the coaxial connector fitted to the back panel of the box. The braid from RG-58 coaxial cable may be used for inter-connections.

The link coil, $L_2$, is formed by isolating three turns in the exact centre of the coil $L_1$. The free ends of $L_2$ should be brought out to the side of the coil, and the centre ends of $L_1$ rejoined as shown in the circuit. Do not earth $L_1$.

If only low power operation is contemplated, $C_1$ may be an ordinary dual-gang broadcast capacitor. These are not too difficult to find. For higher power work, $C_1$ must have wide spaced vanes. A dual-gang 200 or 250 pF unit would be fine for this. $C_2$ may be a dual-gang 415 pF BC type, even for power levels to the legal limit. The

Figure 6.

To obtain a satisfactorily low SWR on one or two bands, experimentally add about one metre of feedline and try again, checking to
make sure that the other bands have not been adversely affected.

**LIGHTNING**

It is doubtful whether anything will protect equipment from a direct lightning strike. However, a spark gap is already provided by the vanes of capacitor C1. It is good practice to disconnect the feedline from the tuner when not in use. In addition, a spark gap, external to the station should be provided. Figure 6 shows the authors feedline on its way to the shack and making use of the grounded metal roof of the garage as the grounded body.

References:
1 Wire Antennas — William Orr; Radio Publications.
2 Radio Communication Handbook; RSGB.

From QST
— December 1985

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**A’MATEUR RADIO AT EXPO 86!**

A state-of-the-art amateur radio station will be featured at Expo 86, the World's Fair on Transportation and Communication being held in Vancouver, BC, from 2nd May to 13 October this year. The station will be located in the main exhibition hall of the Canada Pavilion, dramatically anchored in one of the world's most spectacular harbour settings.

The station will operate on all bands from 160 metres to 1.2 GHz, and all modes including SSB, CW, RTTY, AMTOR, Packet, FM, ATV and SSTV using the call sign VE7EXPO. It will operate from 10am to 10 pm (local time) each day, and provide an exciting and interesting introduction to amateur radio for many of the more than 13 million visitors expected at Expo 86.

VE7EXPO, which will feature ICOM's newest equipment on all bands, will have five operating positions — one each for packet, satellite and VHF/UHF; and two for HF HF antennas include a multi-band Yagi, verticals and home-brew bazookas. The satellite system will use two 14-turn helixes on 434 and a pair of 22 element Yagis on 144 MHz.

The packet station uses the latest VADC G TNC+ packet radio interface, and a computer system to allow the public to ask questions about amateur radio — via a packet radio link to the VADC G's (the pioneers of packet radio in North America) bulletin board. The TNC+ can use the Vancouver V2 and V3 protocols as well as AX.25, so packeters are encouraged to link to the station as well.

The station will be active during as many contests as possible, and count as a special 20 point bonus station during the 1st July Canada Day Contest. All contacts will be QSLed through the VE7 Bureau, with outgoing cards via the CARF outwards bureau.

VE7EXPO will be manned entirely by volunteer amateurs and provide, not only a massive public relations opportunity for amateur radio, but an information centre for many non-local amateurs. Local repeaters on 146.940, 224.300 and 443.525 MHz will be monitored in case visiting amateurs need directions, etc.

Visiting amateurs are encouraged to drop by and operate (with a valid licence or call book address). Amateurs who wish to take part as a group, or who wish to arrange scheds for special events should contact the VE7EXPO Amateur Radio Society, 202 — 13640 67 Avenue, Surrey BC Canada, V3W 6X5.

Contributed by Robert Smits VE7 EM

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Canada Pavilion at Expo 86 — Spectacular Canada Place is the harbour-front site of the Canada Pavilion at Expo 86 in Vancouver.

The flagship of Expo will showcase Canada's finest technological and cultural achievements. The ship-like structure also houses a cruise-ship terminal, the Pan Pacific Vancouver Hotel and a three-dimensional theatre. After Expo 86, the pavilion will become a world-class Trade and Convention Centre, the largest facility of its kind in Western Canada.
The TS-440S is an HF transceiver designed to condense every conceivable feature for SSB, CW, AM, FM and AFSK mode of operation on all amateur bands in compact package. It is the ultimate compact size with the automatic antenna tuner built-in and featuring a highly efficient final amplifier cooling system. It incorporates a 100 kHz to 30 MHz general coverage receiver having superior dynamic range.

**ALL-MODE OPERATION**
Mode selection USB, LSB, CW, AM, FM or AFSK is quickly accomplished through use of front panel mode keys. International Morse code confirms to the selected mode.

**SUPER RECEIVER DYNAMIC RANGE**
The receiver front end has been specifically designed to provide superior dynamic range.

The IM dynamic range is 102 dB, with an overall intercept point of 15 dBm, noise floor level of -138 dB. (An optional 500 Hz CW filter YK-86C installed).

100 memories store frequency, band and mode. 100 memory channels allow storage of frequency, band and mode information, providing increased convenience with simplicity of operation.

Dual programmable band scan allow selection of the desired frequency groups to be scanned. Both groups may also be scanned one after the other.

**SUGGESTED LIST PRICE $1585 WITH AUTO ATU**

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WORMAID COMMUNICATIONS—51 DENNISON STREET, HAMILTON, NEWCASTLE (049) 69 1999
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Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Aust) Pty Ltd and have no guarantee applicable.
18th WORLD TELECOMMUNICATION DAY

Partners in progress: governments, operating entities, manufacturers and users was the topic of the 18th edition of the International Telecommunication Union (ITU) for the 18th World Telecommunication Day, which is celebrated annually on the 17th May. This day was found in 1865, under the name International Telegraph Union, by the delegates of 20 States signatories of the International Telegraph Convention, the first intergovernmental treaty for the regulation of international telegraphy.

Towards Universal Telecommunications

Paris, 17 May 1865: the signatories of 20 states moved by the wish to establish a permanent understanding among themselves, signed the International Telegraph Convention creating the International Telegraph Union, later to become the International Telecommunication Union.

At this time, the industrialisation of certain regions of the world called for increasingly reliable and swift communications. Although the telegraph was already widely used within many states, the creation of a genuinely international telegraph network came up against a man-made barrier, the national frontiers, at which the telegraph wires usually ended.

The International Telegraph Convention of 1865 therefore provided measures aimed at overcoming this obstacle and promoting the development of a world-wide network.

As the first intergovernmental treaty applicable to a public service, the Convention, to which every sovereign state was at liberty to accede — contained the concept of universality which was to become an inspiration for the action of the Union.

The first stage consisted in the standardisation of operating and accounting methods from amongst the different national possibilities; a major innovation in communications was swiftly matched by specific Union action to make use of the new discovery in the world network.

The history of the ITU reflects that of the technological development of telecommunications.

For example, the invention of the telephone in the 1870s led to the Berlin in 1885 of the first regulations governing the international telephone service.

The invention of radiotelegraphy at the end of the last century led to the signing of the International Radiotelegraph Convention at Berlin in 1906.

In the 1920s, the introduction of new services such as broadcasting and the growing complexity of the techniques employed prompted the countries Members of the Union to allocate the frequency bands and to set up Consultative Committees to prepare international standards.

At Madrid in 1932, the Plenipotentiaries of the Union emphasised the universality of telecommunications by deciding to merge the International Telecommunication Convention and to rename the organisation the International Telecommunication Union.

Since then, the intense use of radio communications necessitated the creation of an international board to manage the frequency bands and to adopt new standards which have impelled the Union to adopt regulations for the space services.

A world-wide integrated network was thus gradually established all over the Member countries, accompanied by the affirmation of the concept of universal telecommunication at the service of every member of the human community.

This evolution was greatly assisted by the decision of the Plenipotentiaries, meeting at Atlantic City in 1947, to make the Union the United Nations specialised agency for telecommunications.

Having become part of a large pattern, the ITU actively cooperated with the other specialised agencies in implementing the United Nations Development Programme.

Design and installation of national and regional networks, training and the preparation of plans — particularly for radio communication services — these are integral to the Union's work. All countries, regardless of their technical capacity at any given time: ITU action now recognised the role of telecommunications as a key factor in economic development.

This role was reflected in the work of the 10th ITU Plenipotentiary Conference, held in Nairobi in 1982, which took the Preamble to the Convention signed by the Member countries affirms, took its decisions having regard to the growing importance of telecommunications for the preservation of peace and the social and economic development of all countries.

Thus, the Nairobi Conference marked a turning point in the history of the Union which, while continuing regulation, standardisation, coordination and planning activity, also committed itself to the task of redressing the enormous imbalances in telecommunications development.

Telecom 87

The need to step-up the pace of development led to the establishment of an Independent Commission of 17 wise men to report on the possibilities of applying telecommunication techniques and in publicising the future in the rapidly evolving field of telecommunications through demonstrations of prototype equipment yet to come to the market.

Telecom is for many manufacturers an occasion to unveil new products and to indicate what is on their R and D drawing board.

Telecom exhibitions are organised by the International Telecommunication Union in accordance with a formal opinion adopted by the ITU Plenipotentiaries, in view of their interest in keeping the membership informed of the latest advances in telecommunication techniques and in publicising the possibilities of applying telecommunication services and technology throughout the world.

ITU world telecommunication exhibitions are recognised as the world's largest and most universal telecommunication exhibitions.

Public and private sector operators, as well as manufacturers and suppliers of telecommunications equipment of 34 countries are already participating in Telecom 87. These are: Australia; Austria; Belgium; Brazil; Bulgaria; Canada; China; Czechoslovakia; Denmark; Finland; France; German Democratic Republic; India; Indonesia; Islamic Republic of Iran; Israel; Italy; Japan; Republic of Korea; Kuwait; Libya; Malaysia; The Netherlands; New Zealand; Portugal; Saudi Arabia; Singapore; Sweden; Switzerland; United Kingdom; United States; USSR and Yugoslavia.

Amidst the many facets of Telecom 87, a number of other important related events will take place, such as Forum 87; Book and Audio Visual Fair; 1987 Golden Antenna Film Festival and Youth in the Electronic Age 87.

Unfortunately, the following portion of Andrews Communications Systems advertisement was omitted from page 7. May AR. Apologies are extended for the inconvenience caused.

- Full cross-band cross-mode duplex when Sat ($180); 2m + 70cm/6m fitted.
- FT-2700/RF 2m + 70cm 25W full cross-band duplex FM tcvr. 0.2uV sens, PMS 10ch mem, BONUS Bel 2m Yagi .........$119.00 $999
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- CA-33, 3el tribander, 2kW, 4m boom .... $350 CA-33DX 5el tribander 6m boom .... $429 CA-5 S/S 80-10m vertical .... $149.
- Helicals $35/$39
- CORONA/JUMBO HP-240DX 200W o/p 3.5-30MHz linear .............$279
- NIKKO NCR-912F, 5k, 2.1dB 100' @ 400MHz, $5.50/m "N" Plugs .........$12ea

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Wind driven Battery Charger. Rated Output 20 watts at 20 knots, 6, 12 and 24 volts.

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Phone (053) 39 2898

Page 29 - AMATEUR RADIO, June 1986
KDK FM-240 TWO-METRE FM TRANSCEIVER

It is exactly 10-years since I reviewed a KDK FM transceiver. This was the FM-144-10SXR and was supplied with high power selected or five watts low power. The most obvious is the size and weight. The new transceivers to appear on the local market. Several up-dated models have appeared since, but unfortunately none have been offered for review here. It is interesting to look at the developments that have occurred over that 10-year period.

In addition to this, it has the capability of delivering twice the output power of its predecessor.

KDK equipment has not enjoyed a good reputation for reliability over the years. The early models suffered from poor soldering and many of the original models that are still on the air have alignment problems, particularly in the frequency determination section. Let us hope that the current model has a better record in the years to come.

FEATURES OF THE FM-240

The FM-240 is a compact two metre FM transceiver, and, in fact, the smallest 25 watt FM transceiver on the market at the moment, just beating the Icom IC-27 by a small margin in both size and weight. However, it possibly achieves this by omitting an internal loudspeaker which the IC-27 has, albeit of rather poor quality. The FM-240 is supplied with a microphone/speaker unit.

A multi-purpose LCD readout keeps the operator supplied with all the information ever required. Apart from the operating frequency, it indicates VFO or memory operation, repeater offset, reverse repeater operation, receiver output and transmit facility on the selected channel. Other functions are also displayed during the memory set-up procedure, as we will see later.

All memory information is retained when the DC supply is removed by a lithium battery. It appears that the programming of the CPU is not dependent on the lithium battery as it is with some other brands. Unfortunately the battery is not available to announce the operating frequency but was not supplied with the review transceiver. A tone squelch facility is included to provide a selective calling function. The receiver offset can be varied from the standard 600 kHz if required. Frequency and memory selection is from either the tuning knob on the front panel or the up/down buttons on the side panel.

Transmitter power output is rated at 25 watts with high power selected or five watts low power.

ON-AIR

The FM-240 was used as both a fixed station and as a mobile, and was found to be easy to set up and use once I understood the setting-up of the memory facility. The instruction states that the rig has User Friendly Man Machine Interface. I did not find this to be entirely true and the instructions book was not as clear as it could have been. I feel that most operators would use the transceiver principally in the memory mode — in other words, one of the first full-coverage synthesised transceivers, the FM-240 has a LCD display. While it displays an incredible number of functions, I found it to be rather dull and lacking contrast. The rear illumination is an off-white colour and the digits a rather light black. Perhaps a change of the illumination colour may help.

Overall the front panel presents a very pleasant perspective to the user. One interesting feature is the recessed microphone connector but unfortunately the standard microphone plug is rather hard to tighten up. By the time it is tight, the knurled ring is flush with the front panel, so it is advisable not to cut your fingernails prior to plugging in the microphone. A connector with a longer locking ring would overcome the problem.

In use the microphone/speaker was quite handy. Memory channels could be selected by means of the up/down buttons on the top, or a lock switch at the rear could remove this facility. As is usual with microphone/speaker units, the received audio quality left quite a bit to be desired and then there is the problem of what to do with it when it takes two hands to drive the car! Even a small external speaker produced very superior results.

For mobile use, a handy mounting bracket is supplied as a standard feature, along with a selection of mounting hardware.

UNDER TEST

Frequency Stability and Accuracy: Under hot or cold conditions, the FM-240 was within 100 Hz of the displayed frequency. The 600 kHz offset for repeater operation was also better than 100 Hz.

Power Output: The power output was measured with exactly 13.8 volts DC applied to the transceiver. On initial switch-on and the transceiver at ambient temperature 18 watts was delivered, however, as the rig warmed up on receive only, this dropped to only 15 watts. With intermittent transmit periods, this dropped again to 13.5 watts. The results were very disappointing.

Two different transceivers were tried with similar results. Low power output was checked at 2.5 watts. Again this was well below the specified power. It is suspected that the low power setting may be internally adjustable, but no information is supplied on this.

On the bright side, it was found that the supply voltage could be dropped to 11 volts with very little drop in transmitter power output. Current drain at 18 watts output was 4.9 amps and at 2.5 watts output 2.6 amps. With the transceiver hot and at the lower output power this had dropped to 4.5 and 2.3 amps respectively.

Transmit audio quality was rated as fair. Reports indicated that the speech was rather thin and edgy. Deviation setting appeared to be satisfactory.

Receiver Tests: Receiver current drain was checked with 13.8 volts applied. With the receiver squelched 480 mA. With 250 milliwatts, audio output was 520 mA. The receiver extension speaker output was terminated with an 8 ohm load. Maximum power output was 1.75 watts with one watt at the onset of audible distortion (about five percent). At .5 watts output, distortion was measured at 1.5 percent.

With a four ohm load, the maximum power output increased to 2.5 watts. Receiver noise was measured with a 100 micro-volts input signal with no deviation. This was -28 dBm unweighted and -32 dBm weighted.

Receiver sensitivity was next checked. At one micro-volts input with 1 kHz modulation and 3 kHz deviation, SINAD was 28 dB and S/N ratio 31 dB. A 12 dB SINAD figure was obtained at .8 microvolts. The mule opened at .15 microvolts. The S-meter on the FM-240 consists of seven segments on the LCD display calibrated at S1; S3; S5; S7; +9; +10 and +20. The following results were recorded:

S1 — 2 micro-volts; S3 — 6.3 micro-volts 4 dB; S5 — 10 micro-volts 4dB; S7 — 16.6 micro-volts 2 dB; S9 — 20 micro-volts 2 dB; +10 — 25 micro-volts 10 dB; +20 — 50 micro-volts.
This gives a total range of only 18 dB from S3 to +20. S units on two metres are apparently only 1 or 2 dB. It was also noted that the S1 segment would indicate when the squelch opened even when no signal was present.

As mentioned earlier, the FM-240 has no internal speaker. Instead, a microphone/speaker is supplied. The received audio quality is therefore rather thin due to the size of the speaker. It also limits the actual audio power output because of its inefficiency. In most applications, a reasonable quality external speaker does a far better job. It is a pity that KDK did not supply an external speaker as standard equipment as Kenwood do with some of their current model FM transceivers.

Perhaps the most disturbing aspect of the receiver performance is the spurious and cross-modulation responses. These appear to be a combination of both internally generated and those produced by external strong signals. To leave the transceiver scanning either the memories or a band scan produces a variety of peculiar noises which in many cases wipe out wanted signals. It also brought up the alarm for the priority channel when there was no signal present.

Just to prove the point on this, the transceiver was taken to a quiet country area, but much the same thing happened and, in fact, made it unsuitable for our requirements.

Instruction Manual: The instruction book has a total of six pages, of which the first is the introduction and index. It is purely an operations book. The text covers all aspects of using the transceiver, but there are no drawings or illustrations with the exception of a front panel photograph on the front cover. A series of display representations, say with the memory entry sequence, would be of enormous help. Apart from a circuit diagram, there is no technical information at all.

CONCLUSIONS
With so much in its favour, it is a pity that the FM-240 falls short in several important aspects. However, at the current price it represents good value. The review transceivers were supplied by Emtronics Melbourne.

The following test equipment was used to produce the test figures stated in this article. A Yaesu YP-150 and Marconi TC357 Terminating RF Watt Meters; AWA F242A Noise and Distortion Meter; Daven Terminating Audio Output Meter; Ramsay CT70 Frequency Counter.

EVALUATION AND ON-AIR TEST OF KDK-240 TWO-METRE FM TRANSCEIVER — Serial Number 000411

Appearance

* * * Strong carton with foam inner section.

Size

* * * At this time, the smallest FM transceiver on the market.

Weight

* * * At only one kilogram, the lightest full feature FM rig.

External Finish

* * * Very clean attractive finish.

Construction

* * * Good quality circuit boards and neat wiring.

Front Panel Location of controls

* * * Apart from some push-button controls, which are rather small and close together, most frequently used controls are quite accessible.

Labelling

* Like some of the controls, the labelling is small.

LCD Readout

** Although the readout presents more information than others, its readability is only fair. More contrast needed.

Receiver Operation Memories

* * * * One of the best 16 memories with frequency, off-set, scanning mode and other information.

S-Meter

* * With a total range of 18 dB, only just satisfactory.

Spurious Responses

KDK need to look carefully at this. Not vaguely comparable with current Icom and Kenwood equipment.

Sensitivity

* * Could be better, but over all spoiled by spurious responses.

Received Audio

Quality and total audio output from speaker/microphone poor. Noticeably better with external speaker.

Transmit Operation Power Output

** Not up to specifications, and even then drops off as the unit heats up. Should be much better.

Transmit Audio

* * Rather peaky quality. Fairly good intelligibility though.

Cooling

* Heat sink runs rather hot. Location of transceiver should be carefully considered.

Manual Owners Book

* Covers most operational functions in a fair way, but no technical information apart from a circuit.

Overall Rating

* * Just satisfactory. In other words, try one before you buy. Depending on what you have used previously, you may be either happy or very unhappy!

FIBRE OPTICS

Satellites now used for inter-continental and international communications are being challenged by fibre optic technology. The United States Cable and Wireless Company is now laying the first of two privately owned Trans-Atlantic fibre optic cables between New York and London.

The Overseas Telecommunications Commission is involved in submarine fibre optic cable, planned to run between the US mainland and Japan via Hawaii, being funded by a consortium of countries. Australia and New Zealand will be linked by fibre optics in the next five years.

In Australia, fibre optics are playing a major role in the development of the country's telecommunications infrastructure. This technology is being used for high capacity inter-exchange links and to meet the needs of digital communications.
NEW!! PCS-5000

The BRILLIANT new PCS-5000 2-METER FM TRANSCEIVER!
C-MOS TECHNOLOGY at ITS FINEST!

The Ardex PCS-5000 features unprecedented wide frequency coverage, 20 channels of memory, two separate memory banks with separate or simultaneous scanning. Two ranges of programmable band scanning, up to 11 non-standard offsets, built-in Pt. tone generator, and much more.

ONLY $599

KDK-FM 240

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Both in stock

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Hardware and Terminal Software included.

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Hardware and Terminal Software included.
The 50th Annual WIA Convention was held in Melbourne over the ANZAC Weekend. Federal Executive Members, representatives from all Divisions and two guests from NZART were in attendance.

The Convention Theme was Take Amateur Radio and with it the WIA into the 21st Century.

These photographs show some of the faces that were seen at the Convention.

1. From left: Tim VK2ZTM; Jeff VK2BYY; Wally VK2DEW; Graham VK3AGR; Rowland VK5OU and Don VK5ADD. 2. Max VK3ZS. 3. Kevin VK1OK; Alan VK1WX and Ron VK1KRM. 4. Rear: Greg VK3BGW; Bruce VK600 (partially hidden); Peter VK3AVE. Front: Neil VK6NE; Des VK3DES and Alan VK3BBM. 5. Brenda VK3KT. 6. Convention Attendees. 7. From left: Peter VK7PF; Joe VK7JG; David VK4YAN; Guy VK4ZXZ; Ross VK4IY; David VK4NLV and Terry ZL3QL (who represented the NZART together with Jock ZL2GX. 8. Executive members Bill VK3ABP; Ron VK1RH; David VK3ADW and Allan VK3AE. 9. Barry VK3XV; Tim VK2ZTM; Jeff VK2BYY and Wally VK2DEW.
**AMATEUR BANDS BEACONS**

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**OVERSEAS**

Steve VK5AIM, has recently returned from a trip to New Zealand where, amongst other things, he enjoyed rides on jet boats, helicopter, light aircraft and a ski-lift! The other things were his 75 W, 2m beam and a ski-lift! The other things were his 75 W, 2m beam and antenna. Steve has a good photograph of his 2m beam and antenna, which is unusual. It is 40 kHz in bandwidth and is indicated by beacons on 145.957 and 145.997 MHz.

**THE NORTH WEST**

Last month, I received my first copy of the newsletter of the North West Radio Society, which is edited by Dave VK6YA, at Wickham. In response to my request for further copies, the April issue duly arrived. Included in its pages is a list of new or recently active stations, 33 all located above the 26th parallel, plus one SWL and one rank outsider, VK5LPI! I had no idea there were so many stations up there. Because of isolation, a lot of activity is on HF which is understandable, but the degree of VHF activity is considerable, especially with the availability of two metre repeaters.

Contacts have been made regularly between Karriatha to Broome and Shay Gap by Jack VK6JR and Grant VK6KE respectively, who have also received considerable support from Duncan and down the coast, accessing all repeaters down as far as Exmouth, this latter repeater was last heard in Perth on 27/5.

Ron VK9XJ is returning from Christmas Island where, before doing so, was making considerable effort to try and work to the mainland on six metres. At the VK end were VK6KJZ, VK7JW, VK9Z and VA. During all these attempts and while their beams were on Christmas Island, VK6YA worked three stations in Alice Springs with signals to S9 at 7055 MHz and 144.400 MHz. Ron, VK9XJ worked YO0AMC, in Indonesia at 1100 and S9.

Not content only with that contact, Ron VK9XJ kept firing signals to WA and finally, on 6/4 contact was established with VK7JW. The 2m repeater used 10 meters as an indicator for band conditions, and persistent calls on six metres finally produced the desired result, with reports 5X1 for Ron, VK9XJ.

Andy VK6AQ is looking to construct an SSB repeater, presumably on six metres, for use in the Port Hedland area.

**EME NEWS**

To say the least, the news from the EME scene is very scarce. I note from The Propagator that Lyle VK2ALU has been touring New Zealand and one evening, whilst there, "they had the largest get-together of EME operators in the Southern Hemisphere" with ZL2AGE, VK2ALU, ZL2AQO (ex G4KNZ) and DK5AI, who operates two metres EME in Germany. He dropped in unannounced so fate must have been kind to such a gathering.

Lyle and his gang are still being plagued with security problems at their EME site; a further breaking and entering occurred recently but nothing of consequence. They have recently been taking the valuable equipment home after a period of operating, bringing it back to Port Hedland caseless to say a most unsatisfactory way of working.

Although not known to a lot of people, I have, for some years been plodding along trying to complete a parasitic (dish) antenna for EME operations on 432 and 1296 MHz. Much of the constructional work has already done on the parabola, with all 24 trusses being completed and when assembled, would make a 32 foot (10m) dish.

About two years ago, I began to notice changes

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**IO: YTB: AOU and AUJ. The rally around to get the six and two metre gear together was really something. Sojo VK6SDC and Steve VK6RPC, on a Thursday night and the gear was shipped on Tuesday! G6L will be via VK7RM, QTH.T.”**

It is to be hoped after all the effort that Sojo does not lose his contacts and in doing so, give some more amateurs an opportunity of working VK. It would be great if it could be done on two metres, hardly anything seems totally impossible these days.

Gil goes on to say that “lately I have been mainly on 144 and 432 MHz working aircraft enhancement. Have made it to VK1 on 432 and 144, and into VK2 on 144. Others involved include VK1BG, VK1GL, VK1VP and VK2DFS.

“Was very pleased to work VK6AOM (E) at 1432 using only 10 watts. The 50 watt amplifier was away on loan. Also worked VK7ZIF on 143 and 142. Ian lives in Las Vegas with his wife and family. Gill also pass on an experience he had with a Dick Smith GaAsFET preamplifier. As received it was off frequency and had a poor noise figure. After some tweaking, it tuned up quite well at 50 MHz, which indicates a good performance. It had originally been tuned on a spurious response. Quite a trap!”

A further letter from Gil on 8/6 gives an update on the Macquarie Island business. Apparently the Icebird dropped the people off on the island and then headed off to Sudan. There then (and hopefully) went back to Macquarie to unload cargo, which included the radio equipment. About this time of year was the expected recall time.

Sojo, VK5OS, has been in contact with with ZL2AQE, VK2ALU, ZL2AZQ (ex ZL2AQO) and Lyle VK2ALU has been touring New Zealand and one evening, whilst there, “they had the largest get-together of EME operators in the Southern Hemisphere” with ZL2AGE, VK2ALU, ZL2AQO (ex G4KNZ) and DK5AI, who operates two metres EME in Germany. He dropped in unannounced so fate must have been kind to such a gathering.

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in my walking gait and 14 months ago it became so serious that I was forced into a series of back operations which have been successful, but have left me with balance and walking problems; these would have been much worse except for extensive physiotherapy.

I am now forced into a situation of accepting that recovery can never be complete, and that the inability to lift heavy items and problems with balance particularly when on ladders or greater heights above ground (eg scaffolding, antenna masts, etc) must mean, more or less, permanent changes of life-style. I can do many things I used to, but the two problems mentioned earlier in this paragraph are very serious when it comes to completing a dish and climbing around its tower.

So, with much reluctance, I feel I must terminate the project and maybe do something else. It is a bitter pill to swallow, but then at other times I am thankful I am not in a wheel-chair, which was the alternative!

Accordingly, there must be someone out there who could afford to pay the much reduced price I am asking and be prepared to go on with the project and bring it to fruition. It would seem a pity while the results of my labours languishes in a project and maybe do something else. It is a bitter pill to swallow, but then at other times I am thankful I am not in a wheel-chair, which was the alternative!

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With the demise of Halley's Comet to future generations, one can settle down to some serious DXing even though we are at or near the bottom of the Solar Cycle. There is still a lot of good DX around, admittedly sometimes one has to be lucky, but a call on a dead band can, at times, produce astounding results.

Recently, I was listening on a somewhat ‘dead’ 20 metre band and I heard a VK call CO over a period of a several of minutes. That amateur was kept busy with some very interesting QSOs for a couple of hours. Ladies and gentlemen, give the occasional CO and I am sure you will be quite surprised with the results. If everyone listens and no one calls, the bands appear to be dead. This is proved when a contest is on. Sometimes it is difficult to find a clear space to call CO without interfering with another station.

**AT IT AGAIN**

Frank DL7FT, has been at it again. Same country, same call and it appears that the Greek Society, combined with the authorities, are far from impressed.

The authorities still maintain that he has no approval to operate from Mount Athos, however it appears that Frank has notified the ARRL that he has no permission from the monks, or at least some of the monks.

The big question is, has he got written permission and if so from whom? Any of the hierarchy in this area and, most of all, is it enough to convince the ARRL DX Desk of being an authentic operation.

Early reports from overseas were that Frank was due to visit Visalia to explain his actions. General advice is that he should watch out for a ‘lynching’ party. However, later overseas reports said he was not going.

It would be advisable to hold cards on a wait and see basis.

**LAOS**

XW3LX has been working giving his QSL Manager as N6OT. Unfortunately N6OT is not aware of the licensing application, so if you worked him, you may be another hoax.

**APRIL FOOL’S DAY**

Z1A2Z was heard operating from parts unknown on 1st April. Unfortunately he was giving W3HNK of the monks...and I am sure you will be quite surprised with the results. If everyone listens and no one calls, the bands appear to be dead. This is proved when a contest is on. Sometimes it is difficult to find a clear space to call CO without interfering with another station.

**FALKLAND ISLANDS**

Barry VP8WTV, is active from the Falkland’s until the end of this year. Barry is employed by Wimpney-Taylor-Woodrow, one of two construction companies employed in updating the airport. Hence the unusual suffix.

Barry’s station consists of an FT775DX with 100 watts into a three element triband beam at six metres. He hopes to be active now on both 40 and 60 metres, CW and SSB.

QSLs either direct to PO Box 2, MPA, Falkland Islands or via the bureau to G4ZCN, his home call. Other amateurs active from the area are VP6LJ, VP6ML, P6LM, PM2AO and VP6BM.

**CARDS**

The ever-obliging Joe W3HNK, can get cards for those that are really desperate for the unusual souvenir. Joe is not the QSL Manager for these stations and they should be routed through the Box 88, Moscow Bureau from the respective WIA Bureaus.

**WHERE IS HE?**

Ken G3NBC, present QSL Manager for George VE3FXT, wishes for information on his whereabouts. He has received no logs but lots of cards which he cannot answer. Anyone hearing George could ascertain details of his whereabouts and advise him of Ken’s predication and also advising Ken would be appreciated.

**ONE SIXTY METRES**

Ron VK3BEE, a very keen enthusiast of this band, moved QTH to the wide open spaces at the beginning of the year. His new QTH is in the vicinity of Cockatoo, a delightful area in the Dandenong Ranges, east of Melbourne.

Ron’s new QTH is plagued by 11 kV power lines. By careful selection of the symmetry of locating his low band dipole at 52 metres, he has alleviated the power line noise and has worked and heard a multitude of stations, working and listening on an irregular basis due to the chores of moving into a new home and course having the hassle of working for a living.

Ron states, “This year in particular, the Equinox season has been very good for stations on the east coast of Australia. Good regular openings and at times excellent conditions where signals into the USA, (particularly the east, central and west coast areas) have been heard for up to two hours”.

Ron also reports that “signals into Canada and Alaska regions with a consistent path into Japan, Eastern USSR and excellent signals into Europe have been heard and experienced.

What Ron has worked and heard this year up to the middle of April follows:

**WORKED CW-AM:**


**WORKED SSB-AM:**


**HEARD CW-AM:**

PM: B3646, B4285, B5400, B5402, B5578, B5600, B6988, B5700, B5702, B3000, B5402, B5578, B5600, B6988, B5700, B5702.

**HEARD SSB-AM:**

PM: B3646, B4285, B5400, B5402, B5578, B5600, B6988, B5700, B5702.

**FOXX ACTIVATE AGAIN**

Whilst writing these notes, a note from Kip OA6CD,tested a QSO...Ron states, “I operated from EI Saiz during the WPX Phone Contest using just a TS930 and an 80 metre dipole up at eight metres and made 520 QSOs on 80, 40 and 20 metres. At least 450 of the people I contacted asked for two repeats of the call, 200 wanted a detailed explanation, 100 accused me of being a pirate, and 50 refused to log a QSO, since I was the only XEO on during the contest”.

“Intentional jamming occurred but was infrequent. After 10 hours, I called it quits and decided to operate SSB-AM (40 or 30 metre drive) to be with my family for Easter."

An interesting story and it pays to log all calls one receives. One never knows when it could be a good one.

**SIXTY YEARS**

The Dominican Republic are celebrating 60 years of the hobby by using the special call HI60RCD until the end of the year. For both modes QSL to Box 1157, Santo Dominica, Dominican Republic.

**INDIAN OCEAN EXPEDITION**

Joe WAE6VN, is still looking for amateurs and their wives to join him and his wife on a DX tour of the Indian Ocean. Only adventurers need apply to Joe at his Call Book QTH.

Whilst on the subject of the Indian Ocean it is hoped that the Indian authorities, with the assistance of their Prime Minister Rajiv VU2RG, can activate the Andamanese archipelago, a much overlooked country and is climbing high on the wanted list.

Maybe Joe, if he gets his party together may be able to operate from there or the Indian Society maybe able to launch their own onslaught to assist the DXers. It would create excellent international relations with all countries and would have the backing of the major operators.

See the Contest Column, this issue, for the positive steps Ian VK5OX, has made in an attempt to get Andaman and Nicobar on the air. This is an appealing and fantastic target - let's hope that it may bring some results!

**WARC BANDS**

Fred VK4RF reports that he has notched up 80 countries on 10.1 MHz running 85 watts into a dipole at nine metres.

Several of the interesting countries Fred has contacted on this band are: 4Z4, 5B4, 807, 9H7, 9YG, C30, CT2, CX, EA688 and 9, EI, FG, FM, GJ, GU, GB0, HCB, ISO, 128, KPA, OA, RA, SJ, T5, T6, T9, T30, VP2A, VP3M, VP9, VS8, VV, ZC4, ZL7 and 8 and ZS6.
Congratulations Fred on a sterling effort and it shows that low power and persistence will get through.

TURKISH AMATEURS

The Turkıye Radyo Amatorleri Cemiyeti known as TRAC have forwarded a list of official Turkish amateurs as at 31/10/1985 and claim that all others are pirates. (Please allow for updating by TRAC Bureau). OFFIC- LOCATION EX CALL NAME

TA1A Istanbul TA1UA Unal
TA1B Istanbul TA1SU Salim
TA1C Istanbul TA1ZB Melin
TA1D Istanbul TA1MB Kadi
TA1E Istanbul TA1AZ Husein
TA1F Istanbul TA1NAG Tuncer
TA1G Istanbul TA1KOD Kadi
TA1H Istanbul TA1ES Emre
TA2A Ankara — Cemal
TA2B Ankara — Fell
TA2C Ankara — Teaman
TA2D Ed. Ergi TA2AK Ahmet
TA2G Ankara — Suha
TA2J Gebze-Ist TA2FM Fazıl
TA2K Ankara — Rasim
TA2L Ankara — Endogan
TA3B Izmir — Mustafa
TA3I Izmir — Ergün

Cards for these amateurs will be sent and accepted by the TRAC Bureau.

ETHIOPIA

Correspondence between between Franz DJ2ZB, and Tensay ET3PS, has resulted in Tensay using the Club call ET3PS. This is not yet acceptable to the ARRL DXCC Desk. It appears that Tensay is quite unrestricted and has no limitations on using the club call.

ANGOLA

Gerson PY1APS, is employed by a company building a power plant in Angola. Gerson had occasion to view the 'Lusitania' and applied to obtain operating permission directly and through his Embassy. The reply was no and the official letter from the Angolan Ministry of Transport and Communications included the wording: "Amateur Radio operation is not permitted in the Angolan territory."

Question? Where does that leave D2BCW and others are pirates. (Please allow for updating by TRAC Bureau).

NOT QSL MANAGER

Dave VK3ADD, is not the Manager for Trevor VKOTB, who operated from the Antarctica in 1977. Trevor's QTH is 69 Alma Street, Chadstone, Vic.

GENUINE ACTIVITY?

Yoshi JA1UJT, was due to visit Laos last month. Where will they appear from next?

** Questions and answers are extended to the following: The Editors of WORLDRADIO, CO, JARL NEWS, KARL NEWS, OST, RADCOM, VERON and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER, INSIDE DX, JAN and JAY O'BRIEN'S OSL NEWSLETTER, BARG, CCHQSO, OX FAMILY FOUNDATION NEWSLETTER. Magazines including BREAK IN, cqDX, JA INTERNATIONAL RADIO CLUB, QRZ DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER, Magazines including, BREAK IN, cqDX, JA INTERNATIONAL RADIO CLUB, QRZ DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER.

G9S TO YOU MAY NEED

8Z4BP PO Box 73029, Nairobi, Kenya.
9L1IS PO Box 1289, Freetown, Sierra Leone.
B5YSR PO Box 730, Fuzhou, Peoples Republic of China.
F0GBM PO Box 1249, Pointe-Pitre, Guadeloupe, French West Indies.
FR4DN PO Box 470, 9000, Bruxelles, Union of the Republics.
H44IA PO Box 219, Honjara, Namibia.
HK9BRW PO Box 86, Leticia, Amazonas, Colombia.
J2EG PO Box 2417, Djibouti, Republic of Djibouti.
J7LJ PO Box 245, Roseau, Dominica, Windward Islands.
J8XY PO Box 546, Leticia, Amazonas, Bolivia.
KA4TR PO Box 173, Endeavor, WI 53930, USA.
KG4TR PO Box 149, FN PO, New York, 10593, USA.
V3GJ PO Box 286, Belize City, Belize, Central America.
V85AK PO Box 2623, BSB, Brunei.
VP8VK GARV, 38 Waterloo Road, Darby's Corner, Poole, England.
ZC1RE PO Box 47, Riratonga, Cook Islands.
Z62JB PO Box 1185, Tuinebe, 9000, Namibia.
ZS3JS PO Box 1185, Tuinebe, 9000, Namibia.

THANKS

Sincere thanks are extended to the following: The Editors of weekly, biweekly and monthly newsletters including the ARRL NEWSLETTER, BANK, CQDX, DX FAMILY, FAMILY, Napoquine, The Voice of the International Radio Club, OQR DX, RSGB DX NEWS and The Westlakes Amateur Radio Club NEWSLETTER, Magazines including, BREAK IN, cqDX, JA INTERNATIONAL RADIO CLUB, QRZ DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER.

Members who have contributed include VkasZPST, BEBZ 3YL, ADO, BEE, DIL, 4RF, GOX, ARH and GABIC. Other contributors include the Turkıye Radyo Amatorleri Cemiyeti.
Recently, I obtained a subscription to the International Listening Guide. This is a basic directory of international broadcasting, being published four times a year to coincide with the propagational alterations. It must state that I have found it invaluable, especially in the identification of broadcasters. How is this possible? Well, the survey is divided into two sections: the first being an up-to-date summary of English language broadcasts from the External Services, while the second section is a World Frequency Survey.

As I am writing this, we are at the height of the Libyan Crisis. By using this publication, I have been able to follow subsequent developments. For example, by looking up the entries in the first section, I was able to find what broadcasters were having a newscast at that particular hour. Once I have found the station I require, it is easy to use the second section to ascertain what frequencies are being used, particularly to this region. Say at 0400 UTC, we see that the Voice of Turkey is having an English newscast on 9.560 and 9.730 MHz. The first channel is clear, but there is some interference on 9.730. By looking up that channel in the World Frequency Survey, we see that Radio Havana is broadcasting in Spanish. It also tells me that Ankara is broadcasting on that channel to Asia.

JAMMERS ARE ALWAYS THERE

As one scans across the broadcasting allocations, frequently jammers are heard, with their distinctive CW identification. On 9.520 MHz, the jammers are seemingly ever-present, making it impossible to identify who is being jammed. The survey tells me that it is Radio Liberty, the US backed clandestine station in Russia. The service is almost continuous, explaining why the jammers are always there. The survey also gives the transmitter sites and what operational hours they use. The West German sites are almost exclusively used on 9.520 MHz, yet between 1900 and 2100 UTC, RL uses their Spanish site.

The International Listening Guide is compiled and published in West Germany by Bernd Kosman WB2NQV, who has compiled this guide for years. It is a very useful tool for the SWL. It is not a complete list of all the frequencies used by the amateurs of Canada, and poses a threat to the enjoyment of his neighbours electronic equipment. Canadian DOC, if he should interfere with the operation of the amateur, can be charged under the regulations because he was licensed by the Canadian DOC. The DOC has the power to inspect the equipment he is using and the regulations he is following. If the DOC finds that the equipment is not up to standard, the DOC can take legal action against the person who is using it.

SURVEYS

Personally, I have found it superior to the World Radio TV Handbook, as far as up-to-date, accurate schedule information. The handbook has a plus in that it contains information on the smaller broadcasters, servicing smaller domestic audiences which is not generally contained in the ILG surveys. However, I mainly rely on the ILG observations, supplemented by monthly DX logs from the Southern Cross DX Club and Australian Radio DX Club.

Looking at the surveys, I am somewhat amazed to see that there is a considerable amount of activity between the various broadcasting organisations, yet this occasionally does not happen. This happens where the countries often do not afford diplomatic recognition of each other.

If you are interested in the International Listening Guide, the address to write to is: DX Listeners Service, Merianstrasse 2, D5388 Homberg, Federal Republic of Germany, or to their Australian representative — Howard R Moore, 33 Brooklyn Avenue, Salisbury, S.A. 5108.

OFF THE AIR

And, talking of changes, there was an outcry recently after the BBC World Service announced that it was terminating the popular program — Letterbox. It was scheduled to be aired for the last time at the end of April. This program was a forum for World Service listeners to air their views regarding the output from Bush House — the home of the BBC External Services. At the deadline time (mid-April), the BBC has not so far announced any change of heart, although they indicated that they may review a replacement program in future. In mid-March, Monitor was also taken off. This was a summary of what the various electronic media were saying on current events. So it does appear that there is now a new broom sweeping Bush House.

Incidentally, there has been a re-timing of one of the releases of Waveguide, a program that is to assist the listener to hear the BBC World Service. It has been re-scheduled from 0430 UTC Wednesdays to 0445 Mondays. The other releases at 0750 Sundays and 1115 Tuesdays are unaffected. The DX-Partyline on Radio HCJB recently celebrated its 25th Anniversary, on the 19th May. You can hear it at 0930 UTC Mondays and Saturday, and 0700 UTC on Wednesdays.

SIGNS NOTED

Around mid-winter, it is possible to hear stations on the 41 and 49 metre bands around 0200 UTC, which corresponds to my local midday, in Tasmania. Signals from Europe are coming in across, or close to Antarctica. I realise that SWL/DXers in VK4 and VK8 cannot hear this unusual propagation mode, because they are too far north, although I have been reliably told that they have been heard on the Gold Coast. When I was in Brisbane about three years ago, it was evident to me that these signals were absent, although I have been reliably told that they were heard from North America. Signals from Asia were noted, which were absent down here, yet that isn’t really surprising, considering the location of Brisbane.

DX CONVENTION

The Australian Radio DX Club will be holding a DX Convention on 7th to 9th June, at the Lawson Holiday Resort, in Gippsland. This is about two hours drive from Melbourne, in the foothills of the Great Dividing Range. I believe that there will be ample opportunity to do some DXing as there are no powerlines or interference, an ideal location. Besides that, I believe, as well that there are to be scenic trips arranged to nearby historic towns, such as Warragul. We wish all participants a good weekend.

The accompanying photograph this month is of Ron Rhodes VK3MB, of Yarra Glen, Victoria. I met him at last year’s Convention. Ron is originally from the NSW. He is a DXer and operates for Deutsche Welle the German External Service. We chat occasionally on 80 metres, swapping our observations.

Well, that is all for this month. All the best of winter listening and good DX. — Robin VK7RH.

VE3SR LOSES COURT BATTLE

The judge hearing the suit brought against Jack Ravenscroft VE3SR, seeking damages for interferences on the HF bands. Jack has always operated his radio equipment from his amateur radio operations, has decided the case in favour of the neighbour bringing the suit. (See earlier report, AR April, p8).

The judge granted an interlocutory injunction prohibiting VE3SR from transmitting radio signals from his property and assessed damages and costs amounting to Can$2558. The judge said that which he was not entirely clear. Jack has the right to an appeal of the decision. The unexpected outcome of the suit is a severe blow to the amateurs of Canada, and poses a threat to the operation of any licenced radio transmitters in that country.

VE3SR was given 10 days in which to appeal against the decision.

AMATEURS HELP HOMELESS AND HUNGARY

Amateur radio was selected to provide communications for Hands Across America, on 26th May 1986. It was anticipated that 60 000 Americans would join hands in a line stretching over 4000 miles from New York City to Los Angeles, in a show of unity for 4000 of people, who have nowhere to live. The US Agency for Food last year, and co-sponsored by Bill Cosby, Kenny Rogers, Pete Rose and Lily Tomlin, designed this benefit to aid the homeless and Hungarians. The National Communications co-ordinator was Charlie Kosman WB2NQV.

The American organised communications for the well-known Olympic Torch Run across America, which last 82 days in the longest running net assembled for a special event.

For Hands Across America, Charlie needed amateur operators every mile of the 4100 mile link, as well as 210 command posts — between 4300 and 4500 amateurs equipped with VHF and/or UHF equipment, each of which an amateur was expected to be available for about six hours.

SILENT KEY

It is sad to report the passing of Nick Percival 9Y4NR, President of the Trinidad and Tobago Amateur Radio Society and an active supporter of the IARU.

Nick held preparations for WARC 79. Nick persuaded the Telecom Administration in Trinidad to fully support the IARU position, and in so doing, guaranteed that the IARU original position was acknowledged, instead of the ITU’s version. Nick’s efforts, coupled with those of amateurs in other countries, meant that at WARC 79, amateurs not only retained their allocations, but also obtained new ones.

Many Australian amateurs would be familiar with Nick on the HF bands, and he was a guest at the WIA 75th Anniversary Dinner last November.
CONTEST CALENDAR

JUNE
14-15 All Asian Phone Contest (Rules this issue)
21-22 1985 VK Novice Contest (Rules May issue)
28-29 ARRL Field Day Contest

JULY
5-8 1985 CQ WW CW Contest (Rules this issue)
12-13 IARRU Eastern CW Contest
19-20 Colombian Independence Contest 1986 (Rules July issue)
26-27 Short Wave Hunters CW Contest (Rules May issue)
28-27 Armadillo Run CW (See May issue)

AUGUST
9-10 European CW Contest
16-17 CO WW DX Phone Contest
23-24 All Asian CW Contest (Rules this issue)

SEPTEMBER
13-14 European Phone Contest

OCTOBER
4-5 IRSA World Championship
25-26 CQ WW DX Phone Contest

NOVEMBER
8-9 Australian Ladies Amateur Radio Association Contest
6-9 European RTTY Contest
20-30 CQ WW CW Contest

VK NOVICE CONTEST
I point out specifically the VK Novice Contest for this year, that as this is the first time it has been held in June and should provide somewhat better conditions on the 80 metre band. I hope that many amateurs will be concerned in operating during contests as you can often run across that choice one which you have been looking for.

By the time these notes are printed, the 1986 Amateur Federal Contest will have been held and I trust that, as a result, you will have been able to learn some more about ideas which, as Federal Contest Manager, I would like to see implemented. My report this year covers quite a few items. Amongst them are included: A set of guidelines for certificate issuance, Remembrance Day Contest. I would like these to be extended generically to cover other contests as well. The reason for this item is an attempt to make certificates of more value to the recipients. De- tailed rules for the HF Contest Championship, Amendments to the Federal Contest Manager's Terms of Reference. A request that further im- provement of the Remembrance Day Contest scoring system be considered. That the matter of certificates and trophies for non-members be determined. That whether or not the Ross Hull Contest should be continued, be dealt with at the 1987 Federal Convention, thus allowing entries for the next Ross Hull Contest to be taken into account. That no trophies be provided for Contest Championship places, namely one for Phone and one for CW. I have also requested that the Federal Executive approach various commercial organisations with a view to the sponsoring of trophies for winners of various sections of contests.

So it will be most interesting to see just what happens to these various items at the Convention. I have also assented that the material provided by me be made widely available to members through the magazine, divisional broad- casts and meetings, etc. if you have an interest in any of these items, why not ask either your Federal Councillor or Divisional Council for more information as they have been supplied with complete copies of all the information I have submitted.

You will note from the Contest Calendar above that I have included the date for the ALARA Contest, 1986, I have been asked by Marlene VK2KQF, who is the ALARA Contest Manager, to provide as much publicity as possible regarding this contest. So whilst providing this advance notice, I suggest that this group publicising the contest is for all ALARA members to tell everyone they contact all about the contest. I will be providing a copy of the rules nearer to the contest, probably in the October issue, however I can only ask that the rules be printed once as space in the magazine is at a premium.

I can tell you at this stage that the contest features both phone and CW operating and runs for 24 hours of the UTC day of 8th November. It would seem to be an ideal way of making a lot of CTs contact towards some of the potential CW awards which are available in that contest. I hope that FCM I could not possibly ignore any requests from the VL3 organisation as I am well aware of the old saying about the fury of a woman scorned. I am most sure the ladies, who do so much to assist us mere OMs, particularly when it comes to such things as social functions, providing food for us on field days, etc.

Harking back further details of the ALARA Contest, I must also mention of the Mrs Florence McKenzie CW Trophy which will be awarded to the Australian VL novice operator with the highest CW score, subject to the fact that he or she normally resides in the UK. It happens that at this time they are visiting here with us, this being their first trip to Australia. It is also exciting for them to try to meet each other, albeit the first time and even more so is the fact that while they are here, they will be celebrating their Golden Wedding Anniversary. It was thus most interesting for me to be able to organise a QSO with a Gil- station, G4WMP who always has a most outstanding signal, and have them receive congratulations over the radio direct from England. It is possible to have amateur radio fit in well with life despite the fact that sometimes people might doubt that it can be done.

Well, you might ask, What has this to do with amateur radio?

As I write these notes, the HF bands seem to be looking up, propagation wise, so I hope that this is a contest primarily for novice operators and that this being so, all in the contest will be somewhat easier for you and your dy- namics. Remember also, you cannot hope to win the trophy unless you enter both a phone and CW log. There is certainly some merit, where DX is concerned, in operating during contests as you normally residing in the UK. It happens that at this time they are visiting here with us, this being their first trip to Australia. It is also exciting for them to try to meet each other, albeit the first time and even more so is the fact that while they are here, they will be celebrating their Golden Wedding Anniversary. It was thus most interesting for me to be able to organise a QSO with a Gil- station, G4WMP who always has a most outstanding signal, and have them receive congratulations over the radio direct from England. It is possible to have amateur radio fit in well with life despite the fact that sometimes people might doubt that it can be done.

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As a result of the fact that Doctor Singh proved to be a most enjoyable, as well as charming and extremely intelligent travelling companion, he is a man with an excellent grasp of what the modern world has to offer. This is no small subject of amateur radio came up and he certainly was able to grasp all that I told him as well as being obviously interested in what it was all about. I was told by my friend Jack W6ISQ, who was the President of the Northern California DX Foundation who readily agreed that I should approach Doctor Singh and therefore I was able to see whether this line of work which in some operation might be able to take place from Andaman and Nicobar Islands. Jack assured me that the NCDXF would be willing to help in any way in sponsoring any possible expedition.
transmitting two signals or more at the same time within the same band, except in case of different bands not permitted.

**Point and Multiplier:**

- Contacts among Asian stations and among non-Asian stations will neither count as a point or a multiplier.
- For non-Asian stations — a perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be awarded. A perfect contact consists of 2 points for each band, according to the WPX Contest rules. Eg: J51ABC will count for prefix J57.

**Scoring:**

- The sum of the contact points on each band times the sum of the multipliers on each band.

**Instructions on the Summary and Log Sheet**

- Log sheets — use a separate sheet for each band and keep all times in UTC. Fill in the blanks of multiplier by continents or prefixes only the first time.

**Awards:**

- Certificates will be awarded to the highest scorers in each category on each continent and medals will be awarded to highest scorers in each category on each continent and medals will be awarded to highest scorers in each category on each continent. (Note: Reworking a station in the same band would count as only one multiplier. Cross mode, cross band and repeater QSOs do not count. Where contest preferred segments are incorporated into national band plans, participants are requested to observe them.)

**QSO Points:**

- a Contacts within your ITU zone, as well as QSOs with JA and AU HQ member society stations, count as one point.
- b Contacts within your continent (but different ITU zone) count three points.
- c Contacts with a different continent count five points.

**Multipliers:**

- Total number of ITU zones plus IARU member society HQ stations worked on each frequency and mode.
- Awards: Certificates will be issued to those making at least 250 QSOs with any IARU member society HQ stations, including cases of different bands is not permitted. Additional awards may be made at the discretion of IARU member society HQ stations.

**Certification winners in VK were:**

VK6AOK, VK2PS, VK2XT, VK2PQO, VK4ANG, and VK6DU.

**1985 RESULTS**

Last year V6DU had the record number of QSOs with the highest scorer in the IARU contest. VK6AOK had the highest scorer in the 1985 IARU Contest.

**FIRST IARU HF CHAMPIONSHIP**

The contest period is for 40 hours duration. Operating time for both single and multi-operator stations is 24 hours. Operation must take place on 1.8-30 MHz. The 16, 18, and 24 MHz bands may not be used for contest OSOs.

IARU member society headquarters stations count as one contact per country. The rules of the contest are as follows:

**Conditions of Entry:**

- Each station may operate for the entire 24 hour period.
- A participant must operate from the same station for the duration of the contest.
- A participant may operate in the HF Contest each year.
- A participant must operate from the same station for the duration of the contest.
People will ask you about how to become an amateur. Don’t just say do the exams, tell them how to go about getting started, have addresses handy or you can write for more information, tell them how hard it really is ... and how worthwhile. Nothing will make it easy to get a full call licence, but with novice and limited levels it can be gradual. But everyone has to knuckle under and study, so let us convince them that it is time well spent.

My favourite dislike is the television (not to mention videos) so I often suggest that what you miss on the box won’t really hurt you. The quiz shows won’t do you any good unless you are on them and taking home the money — and just imagine the amount of study the big winners must do. And you won’t remember the Sunday Movie for long, but I would wager that you can remember your first DX contact, or maybe that opening to Finland on 15 metres, last week.

You can show youngsters the advantages of a hobby that can gain them good employment. I noticed in the March Amateur Radio that the Antarctic Division is looking for communications officers, cooks and carpenters. There are jobs on ships, weathertight stations on the islands and countless other openings. The Antarctic Division of the Commonwealth Government is located at Kingston, Tasmania, (phone (002) 29 0209) — I found that the harder it was, the better I felt. The WIA 75 Award really looks good in a frame on the shack wall and it is a great thrill to scan the latest Amateur Radio and find out about what you did when you completed your first CW QSO on air.

Membership

I am not a writer, I am not even much of a talker. You may find me on the local repeater once a week, but I am a real Torre at mind talking. But everyone has to knuckle under and study, so let us convince them that it is time well spent.

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Consider what it costs to spend an hour or two in that week in little extra effort. You may have to find a way to talk to your mates about the latest happenings in your favourite TV soap or to see the antics of the current TV hero ... but you will probably learn a lot about a bunch of people you never knew before, new members.

Let us start by listing a few of the advantages of amateur radio. If you agree and want to do your own personal bit, then write them down and carry them with you, use them in conversations with your friends and tell them to your local newspaper editor. You can possibly think of many more, so write and tell me so we can share them.

Amateur radio is a way to sit down and talk to people, people from America, Japan, the Philippines, China or anywhere, without leaving the comfort or security of your own home. You can talk to old-timers who may tell you about his experiences lugging a radio through war-torn enemy territory, or you may speak to a teenager worried about their HSC examinations, or where to find his next girlfriend. You can have friendly arguments and you can help to save lives in emergencies. There is no limit.

The quiz shows won’t do you any good unless you are on them and taking home the money — and just imagine the amount of study the big winners must do. And you won’t remember the Sunday Movie for long, but I would wager that you can remember your first DX contact, or maybe that opening to Finland on 15 metres, last week.

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Awards

AWARDS ISSUED RECENTLY

Worked All VK Call Areas (HF)
- 1448 David R Ellis ZL1BZL
- 1449 Jim Priest ZL3FS
- 1450 L R Baber VK2RU
- 1451 Lorenz M Perry W7CQE/DV2
- 1452 Keith M Reid ZS6BRD
- 1453 Giorgio Baldassari IK5ACO
- 1454 Vito Kuspal OK3MB
- 1455 Ryuji Nakayama JA0WRF

DXCC New Members
- CW
  128 Sam Galea VK2AKP
- Phone
  343 L R Baber VK2RU
- Open
  233 John Meagher VK2AMV

Worked All VK Call Areas (VHF)
- 166 Geoff Wilson VK3AMK (2m)
- 167 Ronald J Watkins VK3XOA (6m)
- 168 Andrew Martin VK3KAG (2m)

Apology for omission from DXCC ladder in April.

CONGRATULATIONS

Ross Usher VK2ZRU, for being the first Australian to receive the WAC Award from the ITU with satellite endorsement.

BRISBANE AMATEUR RADIO CLUB AWARD

Requirement is to contact seven club members, or four club members plus the club station (VK4BA or VK4WK).

Club nets are held on Monday evenings, 28.445 MHz at 0930 UTC and Wednesday evenings on 146.550 MHz, at the same time.

To claim the Award send a log extract and $1 to the Awards Manager, BARC inc, PO Box 300, Darra, QLD. 4076.

Thanks to Bob Semple VK4CE, for this information.

LAWRENCE HARGRAVES AWARD

Illawarra Amateur Radio Society sponsor this award for radio amateurs.

Requirements are to have one contact with the club station VK2AMW, which will be activated on 28th and 29th June 1986. All HF bands, two metres, 70 cm and 23 cm EME are included in the planned weekend, working from the club's EME site, just west of Wollongong, on the Illawarra escarpment.

Send $2 or four IRCs to the Award Manager, IARS, PO Box 1838, Wollongong, NSW. 2500, quoting the following details:
- Date, Time, Frequency, Mode, operator.

Thanks to Tony Mowbray VK2KAJ, the Club's Broadcast Officer, for supplying this information.

DIPLOMA FRACAP

The award is sponsored by the Radio Amateurs of Central America and Panama.

Two-way confirmed contact is required on any band, any mode, with each of the six member countries.

The countries are — Guatemala; El Salvador; Honduras; Nicaragua; Costa Rica and Panama.

Only contacts after 16th August 1985 are valid for this award and only contacts with amateurs affiliated to a radio club, member of FRACAP, are valid.

OSLs or a GCR list, certified by the radio club of which the applicant is a member should be sent, together with 10 IRCs or US$5 to the Awards Manager of Radio Club de Costa Rica, Bengt Hallden TI4BGA, Box 999, 3000 Heredia, Costa Rica.

Thanks to John Gough VK5QD, for this information.
Kangaroo Island Cape Willoughby Lighthouse Jubilee 150 Award

The Wireless Institute of South Australia Inc. and the people of Kangaroo Island are pleased to award this certificate to...

shortwave listener and world amateur communicator

Kangaroo Island is Australia's third largest island. It lies across the Gulf St. Vincent south-west of Adelaide, the South Australian capital. The Island is noted for its seal colonies and wildlife, its national parks, superb coastline and its historical heritage. It was the site of South Australia's first official settlement in 1836, and for thirty years before that was home for gangs of runaway convicts, ships' deserters, sealers and whalers. The Cape Willoughby Lighthouse commands a spectacular view of the Island's eastern shoreline and the busy shipping lanes to the north and south. It was built in 1852 and was South Australia's first. The historic lighthouse is 20.5 metres high on an elevation of 75 metres. It delivers 370,000 candlel with a range of 23 nautical miles.

Congratulations to Sample operator
AR/SWL... Station
Signed... Station
Date... Cert. No.

The Wireless Institute of South Australia Inc gratefully acknowledges the support of the Kingscote and Dudley District Councils, The Islander Newspaper and the Jubilee 150 Committee.

NEED A POWER SUPPLY

Recently Don VK2TMP was looking for (and still is) a power supply, and happened to mention the fact to a colleague. Said colleague, with a sly grin, said Don an article and said it may be of interest to him. Following are excerpts describing the power supply?

The Ilaiipu hydro-electric project in SW Brazil is the largest installation of its type in the world and requires water-cooling. A water-treatment plant to supply their cooling water, with a capacity of 1,804 cu metres per day supplies pure water in the amount of 1.116 cu metres a day for the valves. The water is de-mineralised and de-oxygenated before use. Each valve has 96 series connected thyristors which are controlled via a fibre-optic triggering system.

Don states fascination, rather than interest was a more apt description of his feelings. "Just imagine thyristors rated at 3,000 amps and require water-cooling. A water-treatment plant with a capacity of 1,804 cu metres per day supplies pure water in the amount of 1,116 cu metres a day for the valves. The water is de-mineralised and de-oxygenated before use. Each valve has 96 series connected thyristors which are controlled via a fibre-optic triggering system.

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In Brazil, thyristor valves are housed in clean-air, pressurised valve halls, which are basically immense Faraday cages, to prevent interference with telephone and control circuits from the intensive fields generated within the building. The thyristors are rated at 3,000 amps and require water-cooling. A water-treatment plant with a capacity of 1,804 cu metres per day supplies pure water in the amount of 1,116 cu metres a day for the valves. The water is demineralised and deoxygenated before use. Each valve has 96 series connected thyristors which are controlled via a fibre-optic triggering system.
AMATEUR RADIO.

June 1986

Recent correspondence with Lindsay VK3ANJ, challenges phone operators. With a son in the Country Fire Authority, Lindsay is convinced that WICEN voice traffic nets are inefficient in comparison with CW nets. Having monitored a lot of the emergency WICEN traffic during the Ash Wednesday Disaster, I am inclined to agree. Given the amount of phonetic spelling and repetition required to pass a simple message on two metres, I suspect a pair of competent brass pounders would leave the mike-bashers for dead. Especially if the phone-ops included some of the operators I have heard who take the trouble to phonetically call the word TANGO HOTEL ECHO!

Lindsay proposes a shootout. He has come up with a proposal for a contest between teams of phone operators and teams of CW operators to resolve the issue once and for all. Each team would consist of eight operators, one from each call area, and the contest would involve relaying a message from VK3 to VK1, via VK7, 5, 6, 8, 4 and 6 in that order. Winners would be judged on accuracy of text and time of receipt in Canberra.

The idea has a lot of merit, but I see some problems with the proposed format — for example, waiting team-members could sandbag earlier transmissions several times (which, of course, would tend to favour the CW operators). And who would you get to judge the results? Maybe the judging wouldn't be too much of a problem if you got a non-amateur, non-technical person with some interest in communications to do it — like perhaps the Minister for Defence. And the sandbagging possibilities could be overcome by making it a point to point exchange, with a CW and phone operator in close proximity at each end.

What do you think? Please let me know, and if there is enough interest I will see if I can get the WIA to organise it.

While we are on the subject of contests, it appears to me that, given the size of the amateur population in Australia, the two contests most of interest to CW operators, the RD and the John Moyle, present certain disadvantages. The RD demands an entire weekend, which limits the scope of a CW-only operator. The JM offers a six-hour section, but demands the effort of setting up a portable station for the sake of those six hours (or you can use the home station and try to work three times as many stations).

Both of the cited contests have to cater for a lot of people with varying interests — so they become quite complex in terms of rules.

I propose a CW Sprint. An all out three-hour CW contest on 80 metres on a Saturday night. Again, if you like the idea (or object to it) drop me a line.

Finally, in case any phone operators have taken offence to anything in this column I had better say that I am not a CW crank; any apparently disparaging comments were intended only to promote competition. To prove it, I will gladly enter an HF phone sprint if someone would like to organise it.

73 till next month.

AR

<table>
<thead>
<tr>
<th>STATION</th>
<th>CALL SIGN</th>
<th>FREQ kHz</th>
<th>HOURS UTC</th>
<th>REMARKS</th>
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</tr>
<tr>
<td></td>
<td>6463.5</td>
<td>Hx</td>
<td></td>
<td>As required</td>
</tr>
<tr>
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| MELBOURNE-RADIO | VIM           | 500      | Continuous| Watch calls and replies          |
|                | 430         |          |           | Primary working frequency        |
|                | 512         |          |           | Supplementary calling frequency  |
|                | 4228.5      | Hx       |           | As required                      |
|                | 6333.5      |          |           | As required                      |
| FORTH-RADIO    | VIP          | 500      | Continuous| Watch calls and replies          |
|                | 484         |          |           | Primary working frequency        |
|                | 512         |          |           | Supplementary calling frequency  |
|                | 4229        | Hx       |           | As required                      |
|                | 6947.5      |          |           | As required                      |
|                | 8597        |          |           | As required                      |
| ROCKHAMPTON-RADIO | VIR           | 500      | 2200-0730 | Watch calls and replies          |
|                | 4255.6      |          |           | Primary working frequency        |
|                | 6333.5      |          |           | Supplementary calling frequency  |
|                | 12040       | Hx       |           | As required                      |
| SYDNEYRADIO    | VIS          | 500      | Continuous| Watch calls and replies          |
|                | 476         |          |           | Primary working frequency        |
|                | 512         |          |           | Supplementary calling frequency  |
|                | 440         |          |           | Secondary working frequency      |
|                | 4245        | 1300-2100|           | As required                      |
|                | 4644        | 0600-2200|           | As required                      |
|                | 8352        | Hx       |           | As required                      |
|                | 8521        |          |           | As required                      |

| 435            | 2300-1200  | Primary working frequency |
| 512            | 2300-1200  | Supplementary calling frequency |
| 4323.6         | Hx         | As required |
| 6407.5         |            | As required |
| 4030          |            |            |
| 16947.6       | 0600-1000  |            |
| 16947.6       |            |            |
| 22315.5       | On request |            |
| * Presently not in use. | | | |

Box 389, Adelaide, SA. 5001
American States amateur station was maintained across the Pacific to determine if reliable amateur communication can be asked — to discover the most reliable and effective way of doing it. Between 23rd May and 5th June 1926, the WIA (Waverley Amateur Radio Institute) radio society asked Australian amateurs to take part in tests to supply from the highest frequencies that they could pass on? If so, please advise the WIA letter-head of the day included the following: The Institute is established for the purpose of encouraging the scientific study of wireless telegraphy and telephony in Australia, and to promote the intercourse of those interested in the subject and to aid them with advice and instruction.

The tests were being organised by the then Honorary Federal Secretary, Ross A. Hull. The WIA's Federal Executive Council in 1925/26 had its Headquarters in the Royal Society's Building, 5 Elizabeth Street, Sydney. Postal address was Box 3120R GPO Sydney. President was Phil Renshaw, and Honorary Treasurer H.A. Stowe.

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There will be further articles on the 1926 Tests in a later edition. Are there any amateurs or SWLs who took part in those tests or have information they could pass on? If so, please advise the Federal Office.

Contributed by Tim Mills VK2ZTM, based on information supplied from the files of the Waverley Amateur Radio Club, VK2BV by Duane VK2VE. (See page 64, November 1985 Amateur Radio.)
Hello again! How quickly the months go by, and ALARA is nearly 11 years old. As part of our celebrations this year, we are pleased to announce an unusual ALARA Birthday YL Activity Day on Saturday, 26th July from 0400-1200 UTC. Phone only, all bands. (Frequencies as for the ALARA Contest). YLs to contact YLs. Sorry fellas! YLs only this time, but the ALARA Contest is coming shortly, and we will be very pleased to hear from you then.

What a fabulous day. The sun shone, the birds sang and the wind did not blow. We gathered outside in the shade so we ate and enjoyed the view of the gardens. The day took on the form of a garden party. We sat under the magnificent trees in Sylvia's garden, listened to the familiar tones of the WARO members and groups of the girls who belonged to overseas YL amateur radio organisations. The OMs were included in the day and had their photographs taken, too. Shortly after 3pm, various ones who had to get away reluctantly said their good-byes and expressed their hopes for meeting again in the near future. It really was a truly fabulous day. Thanks to Marilyn ZL2BOA for this information.

ODDS-N-ENDS

Congratulations to the ALARA members who assisted with the amateur radio segment of the Airways program, broadcast on ABC, earlier in the year, notably Helene VK7HD and Marilyn VK3DMS. Congratulations to Marilyn also on being the first VK member of the Belgian Young Ladies' Club.

Denise VK5YL, would like to sponsor someone, anywhere, who would be interested in contacts on CW. There must be some CW enthusiast among the YLs out there somewhere who would like to be sponsored into ALARA.

I have been informed by an ALARA member, that the meaning of 33 given in this column in March, was not correct. She gives the original meaning as "Love sealed with friendship between one YL and another": The version printed, apparently, came later. My apologies for getting it wrong!

CORRECTIONS TO YL ACTIVITIES LIST

The version printed, originally, was incorrect. She gave the correct version, and it is given in this column in March, was not correct. She gives the original meaning as "Love sealed with friendship between one YL and another": The version printed, apparently, came later. My apologies for getting it wrong!

THE 220 YL NET

This net is still run most competently by Barry VK7GE. (Think I'll resort to a little verseifying!)

Every Monday at 0600 UTC... if one is a CW net.
We wait on frequency... and the VE/VK/ZL YL Net on 14.160 MHz, Fridays at 0600 UTC is a phone net, not a CW net.

The Monday YL-DX Net on 14.220 MHz now starts at 0600 UTC, not 0630!

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The Monday YL-DX Net on 14.220 MHz now starts at 0600 UTC, not 0630!
And catch up with our friends again in Zimbabwe and Fiji.

There were quite a number of call sign errors. But, smarten up fellers, and keep you posted.

Of particular interest to Norman VK4BHJ and Jim VK2BQS, will be the news that the following intruders are all part of the Vietnamese News Agency — VCN; KFB; CKF; VZC; NBJ; PKJ and VMO. Last, but certainly not least is VQ1.

NEW ADDRESS

Bruce VK6XZ, the Western Australian IW Co-ordinator advises of a change of mailing address.

Following are the results of the March QSO Party held on 20 metres.

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<thead>
<tr>
<th>Call</th>
<th>Mode</th>
<th>QSOs</th>
<th>Ar-</th>
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<td>1900</td>
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<td>6</td>
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As seems to be the usual thing for March, old man Skip had quite an effect on contacts in the 20 metres QSO Party.

We are still trying to establish the origins of the alleged taxi-cab operation being heard on the lower end of 28 MHz, and purporting to e coming from Hong Kong, Taiwan.

EXPANSION OF BANDS

And an interesting note from Practical Wireless, January 1986. Proposals made by the ARRL, seeking expansion of the current 28 MHz band section used by the US Novice Licence Holders could, if adopted, create worldwide problems. The international beacon system mainly operates within the agreed sub-band 28.200-28.300 MHz; the ARRL proposal is to allow multi-mode novice operation down to 28.100 MHz (the current US lower limit is 28.300). The use of CW, SSB and RTTY within this sub-band will obviously affect the beacon system and it should be understood that if the novice allocation goes through, US general and higher licence classes will automatically be allowed use of the same frequencies, with up to full legal power. It is further understood that ARRL, in recognition of this fact, would initiate proposals to reorganise and move the beacon network.

It is pleasing to report that I have received my 109 QSL cards back with DXCC from the ARRL, and have to worry about the cards no longer being processed by VOA QSL cards.

BEACONS AND TAXI-CABS

The "V" Beacon, on about 7000 MHz, is also being heard in the Federal Republic of Germany. This was reported as being in Vladivostok by the IARU Region 2 Monitoring System Coordinator, W7JE.

Acknowledgments: VK4AKX and Practical Wireless.

CITIZEN OF YEAR AWARD

Sam Voron VK2BVS was recently one of five people awarded Citizen of the Year by the Willoughby Council.

Sam was honored with this award for the tireless efforts and compassion shown by him during the Mexican Earthquake Disaster.

When not out and about demonstrating amateur radio to the public at every possible opportunity, Sam operates from his shack below the parish house in Roseville, New South Wales.

Sam's interest in radio was aroused when, as a lad of 11, he happened to hear the Voice of America via shortwave on his small transistor radio. Sam wrote off to VOA advising them that he had heard their signals and was thrilled to receive VOA QSL cards.

With this success, Sam then wrote to ships, planes, and the US navy, army and air force. He has heard Francis Chichester on his solo voyage around the world, the first Chinese space satellite (playing the national anthem) in 1966, Radio Helsinki broadcasting to US servicemen and an aeroplane flying to Khartoum from Cairo radioing a message that it was turning back as one propeller had stopped. By this time Sam was hooked on radio, and was given a walkie-talkie when he was 13, so that he could talk as well as receive.

By the time he was 17, Sam had sat for the amateur examinations and received his radio licence.

Last November, Sam relayed a message of congratulations from President Reagan to the WIA on the occasion of its 75th Anniversary. Sam believes that President Reagan has a national communication plan that, in the event of a nuclear attack, should all other communications be wiped out, the first links to bring the country together will be amateur radio operators across the nation.

Abridged from North Shore Advocate, 5th April 1986.

Sam proudly displays the Citizen of the Year Award, presented to him for service during the Mexican Earthquake.

Photograph courtesy Alan Todd.

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With this success, Sam then wrote to ships, planes, and the US navy, army and air force. He has heard Francis Chichester on his solo voyage around the world, the first Chinese space satellite (playing the national anthem) in 1966, Radio Helsinki broadcasting to US servicemen and an aeroplane flying to Khartoum from Cairo radioing a message that it was turning back as one propeller had stopped. By this time Sam was hooked on radio, and was given a walkie-talkie when he was 13, so that he could talk as well as receive.

By the time he was 17, Sam had sat for the amateur examinations and received his radio licence.

Last November, Sam relayed a message of congratulations from President Reagan to the WIA on the occasion of its 75th Anniversary. Sam believes that President Reagan has a national communication plan that, in the event of a nuclear attack, should all other communications be wiped out, the first links to bring the country together will be amateur radio operators across the nation.

Abridged from North Shore Advocate, 5th April 1986.

Sam proudly displays the Citizen of the Year Award, presented to him for service during the Mexican Earthquake.

Photograph courtesy Alan Todd.
Colin Hurst VK5GR
8 Arndell Road, Salisbury Park, SA. 5109

OSCAR-10 APOGEEs
JUNE 1986

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NATIONAL CO-ORDINATOR
Graham Ratcliff VK5GR
Graham Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC Winter: 3.685MHz — Summer: 7.064MHz

AMATEUR RADIO, June 1986

ACKNOWLEDGMENTS
Material has been received from Bob VK3ZBB, Graham VK5GR and AMSATTELEMAIL.

JAS-1
From AMSATTELEMAIL is the latest information on the Japanese (JAMSAT) Amateur Space-craft.

Introduction
JAS-1 is an amateur radio satellite, promoted by JARL as a joint venture with NASA. JARL is constructing a multi-payload satellite to carry out a series of experiments. JAS-1 will provide NASDA an opportunity to verify and improve their systems. NASA and JARL believe that this is the first amateur satellite launch. A team of radio amateurs will be involved in monitoring and operation of the satellite. JAS-1 has been completed and has passed all the necessary tests. It is in a clean room waiting for the launch, currently scheduled for August 1986.

JAS-1 Mission Objectives
1. JAS-1 will provide reliable world-wide amateur radio communications.
2. JAS-1 will enable radio amateurs to study tracking and command techniques.
3. JAS-1 will offer an in-space proving ground for radio amateur developed and built transponders and sub-systems.
4. JAS-1 will provide NASA an opportunity to carry out a multi-payload launch using their new H-1 rocket (NASDA has never engaged in a multi-payload launch, thus the JAS-1 project will offer NASA an excellent opportunity by providing them with an active payload having its own telemetry-beacon and transponder for ranging).

Form and General Dimensions
The space-craft takes the form of a 26-facet polyhedron, which measures 400 x 400 x 470 mm and weighs 50 kg.

Launch and Orbit
JAS-1 will be launched into a circular low-earth orbit, which will be non-synchronous and non-polar.

Launch Vehicle: H-1 two stage rocket
Launch Date: August 1986
Estimated Inclination: 90 degrees
Estimated Altitude: 100 km
Estimated Period: 120 minutes
Estimated window per pass: 20 minutes/pass

Colin Hurst VK5GR
Graham Ratcliff VK5GR
AMSAT AUSTRALIA
8 Arndell Road, Salisbury Park, SA. 5109
successor to AMSAT OSCAR-8’s mode J, which
information exchange. Downlink band, it is comparatively free from man-
Japanese amateur radio communications satellite
engineering team back in 1976.
electrical noise and other interference.
which has a limited communication footprint and
visibility time is used for general messages and telemetry
RMS. Channels are:
channel: 145.850 MHz
channel: 145.870 MHz
channel: 145.890 MHz
channel: 145.910 MHz
Downlink channel: 435.910 MHz
The data format is HDLC. The protocol is AX.25 Level 2 Version 2. The data transfer rate is 1200 BPS for both uplink and downlink.
The reasons for not using Bell-202 type FSK modulation are:
To reduce the parts count onboard JAS-1. Using Manchester coded FM for uplink reduces JAS-1’s onboard decoder chip count by 16.
To improve the downlink margins. Due to JAS-1’s tight power budget, only one watt is generated by the downlink transmitter. A more efficient modulation scheme like PSK is required.
JAS-1 will be a store and forward system but not a real time digipeater. Digipeating is not an effective use of a low orbit satellite such as JAS-1, which has a limited communication footprint and visibility time.
JAS-1 has four uplink channels for one downlink channel. This is because the difference of channel efficiency between uplink and downlink. An uplink channel is shared by several ground users. Since the ground users cannot hear each other, and are listening to the downlink channel anyway, the uplinks are subject to packet collisions. This scheme is called Pure ALOHA, and is known to have a theoretical maximum channel throughput of 18.4 percent. The JAS-1 downlink is 100 percent efficient, since only JAS-1 transmits there. To balance capacity, as well as add redundancy, four uplink channels are used.
The combined uplink efficiency is then 4 18.4 percent or 76 percent. The remaining downlink time is used for general messages and telemetry data.
JAS-1 will accept a connect from only one station at a time with the software scheduled for initial use. Multiple connections will be supported in subsequent software updates. General packet operation is scheduled to begin in November 1986.
Digital Hardware
The micro-processor is a MIL-STD-883B screened

<table>
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Estimated passes per Day

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<td>3 years</td>
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Special Features of JAS-1
JAS-1 carries two separate mode J transponders. One is a linear transponder, and the other is a Mode JA with 0.1% fade insensitivity for non-real-time communication between stations located in different time zones.
The reasons for selecting mode J for this first Japanese amateur radio communication satellite are:
- It is becoming increasingly difficult to use 145 MHz band satellite downlinks because of man-made electrical noise and other interference.
The planners of JAS-1 wanted to provide a successor to AMSAT-OSCAR-8’s mode J, which
was designed and manufactured by JAMSTEC’s engineering team back in 1976.
- 435 MHz is much quieter than 145 MHz as a downlink band, it is comparatively free from man-made noise and sky temperature effects. The digital transponder will provide error-free information exchange.

Transponders
The linear transponder = mode JA:
The passband will be 100 kHz wide. The transponder will have an output of one watt PEP Ground stations will need an uplink power of 100 watts EIRP to reach the satellite. The uplink is LSB; the downlink is USB. There will be a 100 mW CW beacon switchable to PSK when needed.
- Uplink pass band: 145.900 MHz — 146.000 MHz
- Downlink pass band: 435.800 MHz — 435.900 MHz

Beacon frequency: 435.795 MHz
The JAS-1 modem, a special interface board, is used for global control; functions include:
- A simple three-channel tele-command system is used for global control; functions include:
  - A 435.910 MHz beacon (435.795 MHz) for the mode JA CW beacon
  - Four uplink channels and 33 system status flags. This software driven telemetry can be sent in any format, and can include short text messages. This telemetry can be sent on either the mode JA downlink channel (435.910 MHz) or the mode JA CW beacon (435.795 MHz).

Attitude Control
Forced shaking using the earth’s geomagnetic field. JAS-1 has two 1 Ah sq permanent magnets in its Z axis.

Telemetry
Analog system telemetry has 12 analog channels and 33 status system flags. This telemetry can be sent through the help of the NSC800 micro-processing unit, which is turned on automatically by the separation from the H-1 launcher.
The telemetry is sent on the 100 mW beacon on 435.795 MHz in CW, switchable to PSK.
- JAS-1’s digital transponder is a 29 analog channels and 33 status system flags. This software driven telemetry can be sent in any format, and can include short text messages. This telemetry can be sent on the mode JA downlink channel (435.910 MHz) or the mode JA CW beacon (435.795 MHz).

Command
A simple three-channel tele-command system is used for global control; functions include:
- A 435.910 MHz beacon (435.795 MHz) for the mode JA CW beacon

Ground Stations
Mode JA
A 435.910 MHz beacon (435.795 MHz) is used for global control; functions include:
- A 435.910 MHz beacon (435.795 MHz) for the mode JA CW beacon

Digital Hardware
The micro-processor is a MIL-STD-883B screened

NSC-800 running with a 1.6 MHz clock. This is the only processor on board. It controls the digital transponder and also acts as an integrated Housekeeping Unit (IHU). The on-board memory has a 1.5 MB physical storage capacity. 48 chips of NMOS 256k DRAMs are used. A hardware based error-detection/correction circuit is incorporated to protect the entire 1.5 MB and provide a one MB error-free memory area. The system program occupies some 32 KB, the rest is used for message storage.
The memory area physically divided into four identical 256 KB memory cards, any one of which can be assigned as the system area. Up to three cards can be turned off. This design provides system redundancy and allows command stations to control power consumption without total loss of service.
JAS-1 has five hardware HDLC controllers. Four of the time required for the uplink channels and one is for the downlink channel. In total, these controllers consist of some 140 CMOS MOSIs, yet their power consumption is less than that of a single NMOS LS1 HDLC controller like WD-1030. JAS-1 does not have any ROM but has simple hardware bootstrap circuit instead. This design is to increase system flexibility and reliability.

Power System
25 of JAS-1’s 26 faces are covered with a total of 976 pieces of solar cells. They will generate 8.5 watts of power at the beginning of life. JAS-1 employs 11 Ni-cad battery cells with a capacity of six amp-hours. These supply 14 volts average to JAS-1’s main power bus. The 14 volts is converted and regulated to +10, +5 and -5 volts.

Antenna System
JAS-1 has three antennas. Two metre reception antenna; slant quarter-wave mono-pole isotropic 70 cm transmission antenna with -4 dBi gain; Mode JA: Slant Turnstile RHCP +Z axis +4 dBi gain and Mode JD: Slant Turnstile RHCP -Z axis +3 dBi gain.

Estimated passes per day

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AMATEUR RADIO, June 1986 - Page 49
will be made available containing the Manchester modulator and an audio PSK demodulator allowing connection to the modern disconnect connector of a TAPR-style TNC. The modem also connects to the audio input and PTT of the two-metre FM transmitter and to the audio output and frequency control (option) of a 70 cm SSB receiver.

Although JAS-1 will be available to individual access, the general amateur community will benefit from JAS-1 gateways. Messages relayed through gateways can be sent world-wide and is as easy as sending messages to distant stations via a WORLI HF gateway.

Outline of Project History/Schedule

November 1982 Freezing of conceptual/preliminary design
December 1982 Preliminary design
April 1983 — June 1984 Detail design
July 1984 Engineered modules integration and test ground support system integration
August 1984 Flight model #1 integration and test
September 1984 Flight model #1 general test
November 1984 Flight model #2 integration and test
December 1984 Flight model #2 general test
March 1985 Flight model #3 general test
April 1985 Flight model #4 integration and test
May 1985 Flight model #4 general test
June 1985 Flight model #5 integration and test
July 1985 Flight model #5 general test

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia is now producing a monthly newsletter containing updated satellite news, orbital predictions, keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populace informed of the latest information available and to realise funds for the funding of projects or the purchase of items of hardware for a future amateur satellite project, eg Phase 3C, Phase 4 or whatever. The cost of the Newsletter is $15 and cheques made payable to WIA (SA Division), QTHR.

To date the Newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would like something similar in their own countries.

The Newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed in this column, and to date it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR-10 and OSCARs 9 and 11.

If you are at all interested in satellite communication, this Newsletter is a must.

AMSAT-AUSTRALIA DONATION TO PHASE-3 PROGRAM

Following the success story for 1985 that the AMSAT-Australia Newsletter has been, Graham VK5AGR, recently forwarded a cheque to AMSAT-DL for an amount of $5000, as a donation towards the Phase-3 Program. The $5000 was made up by $3000 from AMSAT-Australia Newsletter Subscriptions, plus donations from the Software Service and proceeds from the PC-1246 Pocket Computer Sales, supplemented by a $2000 donation by the WIA (SA Division), being a significant part of the profits of the 400 VK5 two-metre pre-amplifiers that were marketed by the Equipment Supplies Committee of the SA Division. A large percentage of these pre-amplifiers were purchased by listeners to, and operators of OSCAR-10. This sizable donation is a credit to the untiring efforts of Graham VK5AGR, to whom we are all heavily indebted.

PHASE-3C LAUNCH INFORMATION

The current launch date for Phase-3C is 21st September 1986. To keep all relatively informed on the latest developments of assembly and integration, AMSAT-AUSTRALIA are loading weekly bulletins to AMSATTELEMAIL. The bulletins would be significantly out-of-date if used in this column, due to publishing lead-times, however the information is disseminated each week during the AMSAT-Australia Sunday Evening Net. To give an idea of what information is being uploaded to the

Diagrams which accompany the JAS-1 Japanese Amateur Satellite as reported in Amateur Radio, January 1986, page 46.
bulletin board, Status Report Number 3, dated 3rd March follows:

The AMSAT-DL team of Werner Haas DJ5KQ and Hanspeter Kuhlen DK1YQ spent the weekend at the AMSAT laboratory in Golden, Colorado.

Purpose of their trip was to exchange information, particularly for the RUDAK experiment, as well as other matters.

DK1YQ also met with a TAPR representative on Sunday. 16 mm and photo documentation of the control room and the team will return to Germany on 3rd March.

The RF Power Amplifier module will be slightly larger than projected. As a result the mounting points on the stringers are no longer valid, and new ones are being made to accommodate the changed dimensions.

The Arm Safe Plug has been pre-wired and is installed.

The Export Licence Application forms were not received by W3GEY prior to the weekend. The originals are complete and the entire file with all Stated copies will be in his hands in a couple of days.

The Main Battery Pack was wired and the battery case was assembled and closed. The main battery is now mounted in the spacecraft, and will likely be removed only more time to allow installation of the last mounting screw for the fuel tank.

No progress was made on mounting the Helium Bottle Bracket. That awaits the manufacture of additional mounting parts. An alternative mounting plan has been decided upon.

The Main Fuel Tank has been mounted and all mounting screws except one have been installed. That will require temporary removal of the main battery as noted above. The fit of the Main Tank was unusually good and the installation was relatively routine. The reaction from W3GEY was "Something must be wrong . . . that was too easy." Those familiar with the build of the two prior Phase III satellites will remember that the nylon spacers which mount between the tank and the centre core of the spacecraft had to be of various different thicknesses. In the present instance all the nylon spacers are identical.

The Thermal-Vac schedule remains unchanged. Presently a feed-through connector for the Vacuum chamber is being sought and hopefully will be promptly located. There is at least a chance that the Vibration Test may also be done at the Martin-Marietta facility. That question is presently undecided.

Again, as in the past, the contests of this report should be made available to Packet and Bulletin Board Systems.

de WBORLY . . . thanks to TELEMAIL SATELLITE ACTIVITY FOR PERIOD 1ST TO 28TH FEBRUARY 1986

LAUNCHES

The following launching announcements have been received:

RETURNS

During the period, 52 objects decayed, including the following Satellites:

Viking Feb 22
Viking

GENERAL

The Japanese Broadcasting Satellite 2B (BS-2B) was launched from the Tanegashima Space Centre and had tentative orbit elements of Apogee 36322 km, perigee 196 km, Inclination 28.5 degrees and period 641 minutes. Transmitting frequency and power were 2.28072 GHz and 13.5 watts.

As at 18th February 1986, 1943 UTC, ATS 1 was located at 56.310 degrees west with inclination 11.983 degrees.

EDUCATION NOTES

This article has arisen from discussion with, and comment from, several amateurs with many years experience, and from ideas raised in print and at meetings.

We have long been bombarded with the opinion that the main need of our hobby, or the WIA (or probably any club or association with which we are involved), is a strong infusion of young blood. Comments abound on both sides:

- the management is too old, or out of date, set in their ways, unaware of new developments, unwilling to accept new ideas.
- a young recruit is more value than an old retired
- the young are vigorous, enthusiastic, prepared to work, and up with modern technology.
- the old have the more experience.
- we must maintain and increase the number of people who enjoy our hobby.
- if our members drop we lose our lobbying power and privileges.
- change is necessary for growth.
- the present system is okay, why change it?
- amateur radio is such a wonderful hobby that new people should be persuaded to join.

Inevitably, the discussion concludes that we should be recruiting from the youth, but without any clear plan as to means or direction.

If you believe we need to spread the message about radio, have a go at it yourself.

I do not personally believe that any one group is a better target than any other, but you may be able to apply your efforts more towards one particular group — the young, the old, the disabled, or even these alone.

More importantly, if you come up with a good idea or technique, please be prepared to share it. Let me know about it, so I can pass it on. Many are only waiting for a few hints.

36 Baden Powell Drive, Frankston, Vic. 3199

ROY HARTKOPF, VK3AOH
34 Toolangi Road, Alphington, Vic. 3078

THOUGHT FOR THE MONTH

Anticipating change is to benefit from it.  

AMATEUR RADIO, June 1986 - Page 51
VK3RVL — two-metre repeater

The Robinvale two-metre repeater, VK3RVL, is situated atop the Robinvale wheat silo, adjacent to the town centre. It was first placed on-air under test in November 1984, at the residence of VK3KYG. The construction took place most Monday nights and whenever time permitted.

The construction crew consisted of Grameen VK3KYG (who's small, but well-equipped shack was 16x16), it was felt a less specific call was desirable. Geoff (an amateur when he can find the time), and Mark VK3KYG. VK3RVL was placed in its final position on the silo in September last year. Many may think it was a long time under test, but it was no easy task getting the unit and the installers to the top of the silo so it was necessary to make some specific changes in top operating condition prior to final installation.

The equipment consists of an STC MTR151, with a FET preamplifier in the receive line. The cabinet also houses the power supply, antenna, cavity and batteries, in case of power failure. There is one cavity in the receive line feeding a Hoxin 7.5 dB antenna and two cavities in the transmit line feeding a Hoxin 6 dB antenna. Both antennas are mounted on the same mast with about three metres vertical separation, with an extra set of radials between the transmit and receive antennas.

The repeater is on channel 7050 plus shift; time five minutes; mode FM; power 40 watts ERP; range 70 km range approximately; height 115 metres ASL.

The repeater is monitored most waking hours. Contributed by Mark Harris VK3KYG

AUSTRALIAN AMATEUR PACKET RADIO ASSOCIATION

The 12 months since the formation of this group has been one filled with activity and growth — membership has grown from 12, in the initial stages, to 30, reflecting the rapid increase in interest in this mode.

At the first annual general meeting, it was decided to change the name of the group from the TAPR User's Group to the Australian Amateur Packet Radio Association.

As interest was primarily in AX.25 protocol and equipment, and was becoming available from other sources, we felt a less specific name was desirable. Indeed, the group are now supplying a system designed by Chris VK4BCM, which uses a simple modem and a Commodore 64 computer.

A digipeater, VK2RPH, has been installed at Hornsby, on 147.575 MHz, which is providing access between the Sydney and Newcastle local areas. Wollongong-Sydney-Newcastle-Brisbane Links

At Easter, John VK2YGV and Norm VK2TOP from Tamworth set up on mountain tops in Northern New South Wales and were able to provide a link between Newcastle and Brisbane. Stations in Sydney and Wollongong were able to work into Brisbane for the first time. This is believed to be a record for packet linking in Australia. The distance is of the order of 600 miles (965 km).

Packet Boards

The association is, at present, supplying the TAPR bulletin board, with EPROMS and a system manual, for $125 including postage. This board, when completed, costs a total of approximately $270. All components are available locally.

Commodore C64, 128, and SX64 owners —

The packet program written by VK4BCM is currently being distributed by the association. This package comprises a disc with the program and some utility programs, a user's manual and a board manual for assembly and operation. The printed circuit board is for a simple modem using the EXAR chips 2206 and 2211. This board is connected to the user port of a Commodore computer, either via the Commodore RS232 interface or without using the Commodore RS232 interface. This program provides all the usual facilities of the TAPR TRCs, diplogetting, beacons, file transfers, etc. The cost of the board kit is $150, which includes cost of parts to complete the modem costs approximately $30.

Software updates will be announced through Digipeat, the Club's Newsletter/Inquiries and orders for these packet units can be made to the Secretary AAPRA, 59 Westbrook Avenue, Wahoonga, NSW, 2076.

Technical inquiries can be made to Barry White VK2AAB on (02) 467 1428, or in Sydney on repeater 7250.

Membership of the Association is $8 per year.

Bulletin Boards

At present, there are a number of AX.25 packet bulletin boards operating in Sydney and Newcastle.

These PBBS are all on 147.575 MHz. In the future, some rationalisation must take place. There are two schools of thought, one has it that there should be one PBB for the whole network and that there is no point in having more than one for each major area. In our present context, that would mean one in Sydney, one in Newcastle, and one in Canberra.

The idea is to make this system achieve its full potential until unmanned operation is possible, hopefully sometime in the near future.

The association would like to hear comments on this matter from any and all.

Contributed by Barry White VK2AAB.

OLDEST RADIO CLUB REFORMS

The Waverley Amateur Radio Society meeting was held on 21st April at the Sydney Amateur Radio Society, with the aim to re-activate the oldest amateur radio club in Australia. The society was originally founded in March 1919, with a transmitting and receiving licence issued by the then Department of the Navy in August 1920. This licence has now been held continuously for over 65 years. Early experimenters in amateur radio, members of the Waverley Amateur Radio Club. Members from the Albans Hall in Coogee, and St Lukes in Clovelly during 1921 and 1922, who lead to the founding of the present day 2BL and 2FC radio stations. Experiments also took place from the side of the licensing authorities prohibiting commercials in 1935.

An enthusiastic group of 27 attended, with interest expressed by more via letters and telephone calls. A brief history of the Society was discussed and a good response was received to the idea of re-activating the Club to this date.

The next meeting will have 31 fences for the senior competitors to jump and the novice competitors had 26 fences to jump. There were 12 operators used, 11 at field stations with one at a central base station receiving messages from the field stations.

Members who participated were VK7s ZPT; ZHA; ZBT; EG; AX; WL; ZAP; OL; DC; WJ; KDR and VK7XY.

Thanks to John VK7ZPH, WICEN Co-ordinator, for this report.

The Billicart Derby, that was held at Lillico Strasbourg, was also a huge success, with plenty of spills and thrills for the competitors. Thanks to the operators who participated at both events.

The General Meeting concluded at 9pm, allowing time for the guest speaker to complete his talk about the State Library. It has 420 000 books, seven mobile units, and a staff of 600. This is of interest to all amateurs, especially those in Coffs Harbour, with 14 branches in the Hellyer region alone.

There is more to this library than meets the eye. A very good example was given to Florien who had 26 fences to jump. There were 12 operators used, 11 at field stations with one at a central base station receiving messages from the field stations.

Many other facilities available to the public were discussed, concluding with a very good item about cars.

Contributed by Max Hardstaff VK7KY

LIFE MEMBERS

The Club Roster for the Sunday Broadcasts was discussed and a good response was received from the membership to continue doing the relays for all bands. The Club appreciates the willing efforts and hard work done by these dedicated members.

The Gong Award was to have been awarded to Max VK7KY. Max was attempting to explain to a visitor how the Gong works and explained that if an operator spoke for more than three minutes the repeater would GONG-out. On trying to stress this point, that is exactly what happened — an embarrassing demonstration. If Frank VK7ZFH had not been able to take the award to the meeting it would have been presented to Max, however Frank received it again for another month for his good memory!

The President, Bob VK7KAB, thanked members for replying to the request to speak to a group of high school students at his QTH, thus making a good night for the students. Bob is attempting to get a station operational at Savage River High School and even the teachers were impressed with the contacts he made during the night. He is also trying to get a station operational at Wyndham High School and would like to hear from anybody who would be willing to assist.

One of the members now has a new operator in his shack — or should it be a second operator? Jack WK7U received a small Easter present — a kit. It was presented to him by a charming young lady, his adopted grand-daughter. Jack has had to cover quite a few things in the house and the shack but he was getting along with the present for quite a long time to come.

We have been told that when we do the communications for the horse trials next year, we will have to be on our best behaviour as HRH Princess Ann will be competing. (We may have to wear a collar and tie for the occasion!).

The horse trials, held at Wynyard, proved to be a real success, and provided emergency communications and score transfer for the event and was the biggest event covered by the Club to this date.

The course has 31 fences for the senior competitors to jump and the novice competitors had 26 fences to jump. There were 12 operators used, 11 at field stations with one at a central base station receiving messages from the field stations.

Members who participated were VK7s ZPT; ZHA; ZBT; EG; AX; WL; ZAP; OL; DC; WJ; KDR and VK7XY.

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Contributed by Max Hardstaff VK7KY
POWER-LINE FILTERS FROM WESTINGHOUSE SYSTEMS
FN-346 — FILTER WITH HIGH ATTENUATION

This new power line filter is designed for currents of 1.6; 2.5; 6 and 10 amps. Its excellent attenuation characteristics are similar to those of a two-stage power-line filter. The FN-346 is suited for the suppression of common mode interference as well as for the interference elimination of switching mode power supplies and clicks. The power-line filter is equipped with an IEC plug, on the secondary side alternatively with fast-on 6.3 x 0.8 or flex wires.

TWO-STAGE FILTER FOR HIGH CURRENTS

The FN-383 and 684 are designed for currents of 10; 16; 25 and 36 amps. The very good common mode and differential mode attenuation characteristics are effective at a frequency of 10 kHz (frequency range 10 kHz to 300 MHz). These filters are suitable for the central computer units and for high current switching mode power supplies. The excellent cost performance ratio makes this product very attractive.

FILTERS WITH IEC-PLUG, FUSES AND EARTH LINE CHOKE

These filters are equipped with two different fuse-holders: type FN-291 with fuse-holder for one fuse; type FN-292 with fuse-holder for two fuses. The fuse-holders can be equipped alternatively with 6.3 x 32 mm or 5 x 20 mm fuses. They are especially suitable for use in electronic equipment such as office machines, calculators and measuring instruments, due to a good common and differential mode behaviour in the range of 150 kHz to 300 MHz. For the application in peripheral equipment, both series are available with an earth line choke, type FN-291E and FN-292E.

Further enquiries about these products should be directed to Westinghouse Systems, PO Box 267, Williamstown, Vic. 3016. Phone: (03) 397 1033.

CB EQUIPMENT

GFS Electronic Imports recently announced their intention to further enhance their extensive range of amateur radio and commercial products by adding Citizens Band equipment to the inventory. The highly regarded Electrophone brand will feature prominently among the 27 MHz and UHF transceivers. Eight years of experience in the amateur and commercial communications field has provided GFS with an expertise that most others selling CB do not have. For example, they are able to advise customers on such subjects as the correct antenna and coaxial cable to use for a particular application.

GFS also have a fully equipped workshop so they may meet the servicing requirements of the CB market including backup service on the products they sell.

In the area of accessories, they stock beams, a range of different low loss coaxial cables, antenna rotators and non-conductive high strength Debeglass guy wire.

For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. 3132. Phone (03) 873 3777.

ELECTRONICS SHOW

The 1986 Perth Electronics Show will be held from 31st July to 3rd August 1986 at Perth's Claremont Showgrounds, and will be the largest and most comprehensive consumer electronics and homeware exhibition in Australia and the South East Asian region.

Over 12,000 square metres of exhibition space has been sold in 13 pavilions and most major electronic/electrical companies will be represented.

For further information contact Chris Gulland, PO Box 745, West Perth, WA. 6005, or phone (09) 382 3122.

PORTABLE SOLDERING IRON

The Portasol is a portable pen-sized soldering iron used by people in the electrical, mechanical and engineering fields.

It is a butane gas powered iron, ignited by a flint ignition in the cap. It has a 10 to 60 watt temperature control and each fill with gas lighter fuel gives 60 minutes of continuous use. The Portasol also comes with three tip sizes and each tip gives 30 hours of use. (Maximum tip temperature is 400 degrees C)

It is the smallest soldering iron available and it can be used in almost all conditions, indoors and out. The design features also include important safety advantages. When the cap is replaced the gas is automatically switched off and when the user is finished with the Portasol there is no need to wait for it to cool, or find a suitable place to rest it as the cap is able to withstand up to 250 degrees. There is little waste or leakage since the user can switch on and off at will. It also takes just 20 seconds to reheat, and because it is static free, it is ideal for use with CMOS and other static-sensitive components.

For more information contact Stephen Tubby or Don McNeill at DRM Industries on (02) 997 5522, or write to 14 Tangith Crescent, Mona Vale, NSW. 2103.
NEW LITERATURE

Analog-Digital Conversion Handbook, a comprehensive guide to conversion for engineers and scientists, contains 92 chapters and is published by Analog Devices, Inc and Prentice-Hall.

The third edition of this well-known handbook has grown to 700 hard-bound pages, with seven new chapters, bibliography, and index. An easy-to-use table of contents summarises the book’s five sections, which range from converter theory, design and implementation, to practical applications and measuring techniques. The work is unique in that it includes virtually any SSB transceiver with a power output in the range 60-150 watts PE. The amplifier is compatible for use with virtually any SSB transceiver with a power output in the range 60-150 watts PE.

Installation is simple. The amplifier is inserted in the coaxial line to the antenna, and the power and control connections are made. The only operational adjustment is to set the exciter ALC to provide the correct drive level. The T500M is rated for operation over the temperature range 30 to +60 degrees Celsius. The duty cycle is 50 percent transmit/receive at an ambient temperature of 25 degrees Celsius in the range 60-150 watts PE. The duty cycle should be reduced at higher temperatures. A thermostat on the heat-sink switches the amplifier off if the heat-sink temperature exceeds 75 degrees Celsius.

Related Circuits and Devices; includes A/D and D/A converters, discusses operation, technologies, architectures, designs and how they are used for best results. A new section, Converters for Special Applications, covers conversion for video, telecommunication, and audio equipment.

The book is available from Parameters Pty Ltd, 25-27 Paul Street North, North Ryde, NSW. 2113; or 1084 Central Road, Oakleigh South, Vic. 3167 to whom all enquiries should be directed.

LINEAR AMPLIFIER

The Transworld Electronics T500M is an all solid state linear amplifier designed for land or marine mobile operation or for base station use with the optional AC power supply. The amplifier uses a new series of high power RF transistors operating directly from a 12 volt supply source and does not require a power supply for mobile operation. The amplifier draws no standby current and only draws current from the power supply when it is operating. It is designed to provide a substantial increase in signal strength and does much to compensate for the low efficiency of the mobile antenna. The amplifier is compatible for use with virtually any SSB transceiver with a power output in the range 60-150 watts PE.

This year’s Wet Season in Northern Queensland began quietly enough and appeared as though it would be fairly dry in some inland areas of the cattle country. However, on Wednesday, 29th January, the weather began to intensify and the cloud mass, seen by the weather satellite, began to take on the familiar circular pattern of a cyclone, with the barometric pressure falling steadily.

The cyclone, by this time code-named Winifred, started moving slowly to the south-east, intensifying as it travelled. Heavy rain commenced falling over a wide stretch of the North Queensland coast, rivers and streams began to rise, and by evening, the railway line near Babinda was cut by rising flood-waters.

Region One WICEN operators commenced cyclone track plotting, with Alan VK4BAJ, Cairns Area Net Controller, in charge of the VHF stand-by net on the VK4RCA repeater. Amateurs in areas likely to be affected by the cyclone checked into the net with weather and emergency information.

Townsville Region One-A WICEN operators were also alerted, and a HF link was established on 7,060 kHz.

Cyclone track plotting is carried out on large scale charts marked with a latitude and longitude grid, showing the coastline and main population centres. Since the hourly meteorology department reports broadcast by the Central Queensland and Shipping Radio Stations are used, distances are expressed in nautical miles and wind speeds in knots. (Townsville and Darwin Radio Stations include cyclone watch messages and gale warnings on 2,201 and 4,428.7 MHz.)

On the morning of the 30th, Winifred was located 650 nautical miles east of Cooktown. The cyclone was moving south-west towards the coast. At this time the barometric pressure had fallen to 985 mbs and wind gusts were 100 knots (185 km/h). The duty cycle is 50 percent transmit/receive at an ambient temperature of 25 degrees Celsius in the range 60-150 watts PE. The duty cycle should be reduced at higher temperatures. A thermostat on the heat-sink switches the amplifier off if the heat-sink temperature exceeds 75 degrees Celsius.

Region One WICEN remained in contact with all coastal amateur stations, and in particular, with the Townsville Club, VK4WIT, at their SES Headquarters.

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During Saturday, 1st February, Winifred continued moving slowly towards the coast. With increasing rain and increasing wind speed, road and rail traffic was disrupted. Cairns International Airport was closed to traffic and by midday, the barometric pressure had fallen to 960 mbs, with centre wind gusts to 119 knots (230 km/h).

The regional State Emergency Service (SES), which had been on stand-by alert, went into full-activation in all coastal centres and on the Atherton Tablelands. Communication operators, including many amateurs, were then called for assistance from WICEN as their VHF and UHF generating systems and for the first time makes high power land, air or marine mobile operation a practical reality.

This capability allows Adams-Russell to offer proven designs with measured electrical performance as follows.

WRD65028 frequency range 6.5-18.2 GHz; VSWR 6.5-7.2 GHz 2.1:1 maximum, 7.2-18.2 GHz 1.5:1; coupling 3.1 ± 3 dB, collinear isolation 14 dB minimum, E-H port isolation 30 dB minimum. WRD75024 frequency range 7.5-18.2 GHz; VSWR 1:51 maximum; coupling 3.1 ± 3 dB, collinear isolation 14 dB minimum. E-H port isolation 30 dB minimum; power handling * 50kW peak 1kW CW average.

* Power handling testing has been limited by the availability of high power transmitters. Ultimate levels are yet to be determined.

Insertion loss (dissipative and reflective) are included in the coupling tolerance.

Mechanically, Magic Tees are supplied in a two inch (50mm) cubic form with cover (clearance or tapped holes with helical inserts available). Gasket grooves can be added to the tee as well as a built-in 50 watt fourth port termination for those who need only three ports.

For further information contact Scalar Distributors Pty Ltd, as above.

High and Dry! A victim of Cyclone Winifred. Photograph courtesy Innisfail Advocate.
Winifred crossed the coast late on Saturday evening south of Innisfail, with the eye passing inland roads. As soon as the wind speed abated, SES rescue crews, assisted by volunteers and Army and Navy units, moved into the disaster area to render assistance to the injured and homeless survivors. The SES called for volunteers from the Cairns Radio Club with VHF hand-held and mobile units to provide communications for the Army and Navy units.

Club President, Colin VK4EX, together with Mike VK4AMO, Ray VK4BRC and Nick VK4YT moved with the service units whilst John VK4VVL was with the team as a driver.

Casualties and injuries were surprisingly light thanks to the swift warnings by Police and SES personnel through local broadcast and television stations before the blackout.

As soon as weather conditions permitted, several injured persons were airlifted to Cairns Base Hospital from the disaster area by the SES and other helicopters. The Army unit organised a team of local vehicles to light the innermost airship so that an RAAF Hercules aircraft, loaded with tarpaulins and other urgent supplies, could carry out a night landing.

For the weary radio operators there were many more hours of traffic handling, as relief operations were stepped-up and the mammoth clean-up task began in earnest. Where-abouts and welfare queries from anxious relatives also added to the workload.

Finally, when Telecom workers had restored telephone links, WICEN and many SES Centres were able to close down after a job well-done.

Some 35 North Queensland amateurs were involved with SES communications as Group Leaders, instructors, and operators, particularly in smaller country centres. WICEN, through local clubs with facilities such as VHF repeaters, have been able to provide extra channels. Also, WICEN being an independent service, has the ability to prepare the before the event, keep a cyclone track plot, gather information from operators and be ready to activate a full network when required, whereas the SES is not usually activated until emergencies happen and/or a disaster area is declared.

Cyclones, which are violent rotating windstorms accompanied by heavy rain and low barometric pressure, cause heavy destruction which is confined mainly to areas on either side of their track. Thus communication centres with VHF repeaters should be able to remain serviceable and be ready to assist after the cyclone has passed.

The Cairns Amateur Radio Club's two metre repeater VK4AFC (6650), is located in Mount Bellenden Ker, which, at an altitude of 5200 feet (1584m), commands a large area of the rugged coastline and tablelands. The VK4RCA two channel UHF repeater remained on air during the entire period, in spite of being subjected to estimated wind-speed gusts between 135 and 170 knots (250 and 300 km/hr).

The VK4RCA antenna is fiberglass and, while suffering some surface cracking, is still serviceable. An aluminium Yagi antenna, intended to link with the Townsville repeater VK4AT, vanished during the blow.

Past experience with antennas at this site has indicated that high wind speeds cause excessive vibration in aluminium elements which results in crystallisation and corrosion, leading to eventual failure under gusty conditions. These points should be considered when designing aerials for mountain-top repeaters.

The CARC is preparing to activate its second two metre repeater, VK4ART, on channel 6675. This system is a back-up to VK4AT, located at Longlands Gap, and the southern end of the Atherton Tablelands. At an altitude of 3770 feet (1150m), it will also cover a wide area, including much of the lonely Kennedy Highway. The ability to back-up VK4RCA in emergencies will be of vital importance to the region.

Cyclone tracking messages from the Bureau of Meteorology are issued to the public through local broadcast and television stations and these are expressed in the metric system.

For WICEN operators, and others who may be involved in cyclone track plotting, a table of conversion factors follows:

- statute miles x 1.609: statute miles = kilometres x .6213
- nautical miles x 1.853: nautical miles = statute miles x .5396
- statute miles x 1.1515: statute miles = nautical miles x .8684

On nautical and plotting charts, one degree of latitude equals 60 nautical miles measured at the location's latitude; 1 degree of longitude equals 111 statute miles measured at the equator. For Canberra and Darwin facsimile transmisions from high Australia, and causal information to mariners, 1/1/86, or the Bureau of Meteorology.

Amateur radio operators involved with the SES were: Mike VK4AMO; Nick VK4YT, and CARC members (Cairns) — Bob VK4AV; Allan VK4PS; John VK4AFS, and TARC members (Townsville) — Fred VK4FWM (Atherton) — Ted VK4YG; David VK4AW; John VK4MJH (Ravenshoe/Heberton) — John VK4FCC; Terry VK4ATY (Eacham Shire) — Mario VK4MS (Ingham).

WICEN-CARC members involved in disaster area communications were: Alan VK4AV; Colin VK4EX; Ray VK4BRC; Albert VK4CL; Gordon VK4AGZ; Will VK4ANZ; John VK4AJE; Peter VK4BDK; Norman VK4FGG; Tony VK4FOX; John VK4VVL; and the VK4AFC (northy VK4FCO); Claude VK4DO; Bill VK4ET and Dale VK4DM.

REFERENCES AND ACKNOWLEDGMENTS

Australian Notices to Mariners: RAN Hydrography

Cyclone Tracking Map: Bureau of Meteorology

Region One WICEN Plan: VK4YG

Photograph: Innisfail Advocate

MANLY WARRINGAH RADIO SOCIETY

The Annual General Meeting will be held on 9th July 1986, at 7.30pm. See next months Club Corner for full details.

MANLY WARRINGAH RADIO SOCIETY

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The Annual General Meeting was held on 5th April 1986. A report has been given to members via the Broadcast on the 6th April. A written report on the meeting will be included in a later Mini-Bulletin.

There were 645 ballot papers returned for the election of the WIA Victorian Division Council as follows:

President
Roger Henley VK2ZIG
Tim Mills VK2ZTM
Peter Jeremy VK2PJ
Roger Horsfall VK2KFU
Dennis Williams

The meeting opened at 14:10 and closed at 18:50 hours. The Returning Officer for 1986/87 is Peter O'Connell VK2EMU.

The meeting was open to nets, hook-ups, or general QSOs by WIA weekly broadcasts. This privilege does not extend to nets, hook-ups, or general QSOs by WIA weekly broadcasts. Anyone wanting to make a contact with the potential seller or buyer of an item should write to the WIA Victorian Secretary.

An Annual Field Day will be held at Port Macquarie for a few days of the July holiday period.

ANNUAL GENERAL MEETING
The Annual General Meeting of the Victorian Division of the WIA was held on 14th May. A full report of the AGM will appear here shortly.

TIME CAPSULE
The Time Capsule was sealed at the AGM, and will not be re-opened until 2011 when the Institute celebrates the WIA 100th Anniversary.

WANTED OR NOT—WANTED SERVICE
A disposal equipment list is available to members through the Sunday Morning Broadcasts via VK3BW.

The WIA has received permission from DOC to broadcast details of equipment for sale or items wanted. The service can include the price being asked for the equipment.

DOC has stressed that the offering of disposals equipment on-air is only authorised through the WIA weekly broadcast. This privilege does not extend to nets, hook-ups, or general QSOs by radio amateurs.

Amateurs who have equipment they wish to dispose of, or are looking for a particular item of gear should write to the WIA Victorian Secretary. The information will be checked and put on a list on the Broadcast. Anyone wanting to make contact with the potential seller or buyer of an item must contact the Wireless Institute Centre between 10am and 3pm weekdays for further details.

LINTON-HARRISON PAPER
The Victorian Divisional Council met on 20th March, and at the request of Jim Linton VK3PC, the paper Amateur Radio — Future Direction was discussed.

The paper proposed four steps to improve the current licensing and examination standards and conditions.

1. Introduction of a new Novice licence with a lower grade theory examination

2. Enhancement of the current Novice licence, and the addition of Data Transmission mode privileges — introduction of an Intermediate Novice licence with additional privileges


Council considers Novices should then be allowed use of

4. The introduction of a separate Issue. The subject of Unattended Transmissions was discussed. Council would support the removal of Defined Mode restrictions for AOCP and LAOCP holders in the VHF and UHF spectrum only. Council considers the Power Limit is not within the scope of the discussion paper, and should be discussed as a separate issue. The subject of Unattended operation is believed to be already addressed in the updated DOC Operating Handbook.

Publications
The Education Service, WICEN, Dural, Parramatta and Repeater Committees will be notified in a future Mini-Bulletin.

CLUB INSURANCE
A report on a (possible) Public Liability Insurance package has been prepared and distributed to many of the clubs in the State. Copies are available from the Divisional Office.

ACTIVE AGAIN
Waverley ARC (VK2BV) is currently being reformed after a few years of in-activity. It is to cater for those with radio and electronic interests in Sydney's Eastern Suburb.

A reminder that these notes can only cover a small part of the activity in the State. Informed amateurs listen to the Sunday Broadcasts — do you?

NEW MEMBERS
The VK2 Division would like to welcome the following new members who were in the April issue.

B Brown, LINTON-HARRISON, Port Kembla; A E Sheppherd VK2EDS, Maroubra; D K Findley VK2KDF, (Overseas); J J Perkins and Douglas Richards VK5CCY.

JUNE HOLIDAY WEEKEND
A reminder that, over the weekend of 7th and 8th June, the Oxley Region ARC will be conducting their Annual Field Day at Port Macquarie.

REPEATERS
The Armidale Amateur Radio Club has submitted an application to establish a 70 cm repeater on an elevated site to the east of the city, to serve the region. The requested channel is 8175. Call sign is VK2RNT. The application is in order for processing.

During April, a posting of Information was made to all repeater groups. It was mainly to update their listings for the new Call Book. If your group is as yet to return the various forms, please do so without further delay.

TOWER FUND
Amateurs in Kentucky have established a fund to assist John Thomas WM4T with legal expenses to fight restrictive tower ordinances. John's case, which has been remanded from the Federal Appeals Court back to the Federal District Court, has already cost him an estimated US$10,000 in legal fees with no end in sight.

From The ARRL Letter
Five-Eighth Wave

It is with regret that we report the passing or two well-known Old Timers, Harvey Judd VK5HQ and Alan Heath VK5SZK. Both had been ill for some time and in both cases, it would have been a happy release from pain.

Our sympathy goes to both families and, in particular, to Alan’s case to his son Chris VK5ZZX, and in Alan’s, to his brother Colin VK5FX and Colin’s son, Owen VK3KI, the Honourable Ian MacPhee MHR, who just happens to work in the Shadow Minister for Communications, Lance Bickford VK4ZAZ, from SES State Headquarters and John Bews VK4KJB, who gave a talk on Packet Radio.

On Sunday morning, Mr MacPhee spoke to the gathering and, not only sought questions from the delegates, but spent considerable time in asking questions of the delegates. What better way for a politician to gain knowledge of a special subject than to ask the people at the very grass-roots of the matter. All felt that Mr MacPhee’s visit was a very valuable one—to both parties.

The Conference discussed the paper, Amateur Radio -- Future Direction. Thoughts expressed were many and varied but most were not in favour of the lowering of standards or concentrating on recruitment from any one group. Most agreed that our object should be to make the public more aware of amateur radio. There were no real solutions found but the paper certainly has brought forth plenty of discussion and this, most would agree, was its aim.

Both club motions and Federal motions for the 1986 Federal Convention were dealt with, but could not be recorded here, the minutes of the Conference run to some 22 pages of foolscap.

Both of the Queensland Federal Representatives gained valuable insight into the goings-on among the movements for the 1986 Federal Convention and, as in past years, the Queensland voice over the ANZAC weekend was heard loudy and clearly at the Convention in Melbourne.

The WIA Council is greatly indebted to these people who worked so hard to bring the 1986 RCC together; Anne Minter VK4KZX, Barry Ker VK4BK; Aaron Hopkins VK4ACO, David Jones VK4NLV and Anne Stafford.

NEW UHF REPEATER IN QUEENSLAND

The Dalby and District Amateur Radio Club have installed a UHF repeater on Mount Mowbullin in the Bulga Mountains. The frequencies are 439.700 MHz downlink and 433.700 MHz uplink. Please amend your Call Book to include this information.

CORRECTIONS TO 1985-86 CALL BOOK

On page 120 — The South-East Queensland Teletype Group meeting should read the first Friday of each month.

On page 113 — The Broadcast Directory, in the VK4 section, delete the words and 20 metres RTTY.

The SEQTG runs a news broadcast at 1000 UTC on Monday evenings. The frequencies are — two metres, channel 7050; 3.630 MHz and 7.045 MHz.

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Over to You!

The program generates azimuth angles which may exceed 360 degrees. This may be easily corrected by the addition of a further new line:

```
332 IF A2 > 2 * PI THEN AZ = AZ - 2 * PI
```

2 Seemingly quite randomly dependent on the input parameters the program will fail due to overflow error. This is annoying, because of its seeming randomness. These overflow errors may be avoided by using the arc cox function for DEF FNA(X) in line 300 in lieu of arcsin function used by the author. Line 300 then becomes:

```
300 DEF FNA(X) = ATN(SQR(1-X*X)/X)
```

However, this last change will give rise to overflow errors if the observer is on the equator and LA = 0. The value of X calculated in line 200 will then also equal 0 and it follows that the attempt to divide by 0 in DEF FNA(X) will again produce an overflow error. This behaviour is quite predictable, unlike the overflow errors produced when 12-arc sin X function is used in line 300, and close approximations of azimuth angles may be obtained by entering a small +ve value such as .01 for LA instead of Zero.

It should be noted that this last change will give rise to overflow errors if the observers latitude LA = ±90 degrees, ie he is at either the North or South Poles. This is of no consequence of course, as the satellites are too far below the horizon at the poles to be of any use to amateurs who might perhaps venture there.

Re the Morse Code Generator Program, AR, January 1986 pp8. The reproduction of the program listing is too small and too faint for me to read other than with great difficulty. I certainly could not type it into my computer without making literally hundreds of errors. May I make a plea for larger, darker print for such listings in AR for the benefit of new people are not attracted to this noble hobby. The reason in my opinion is that it is generally too difficult for a real amateur to become a radio operator. After all, an amateur is one who enjoys their activities.

Murray Dignams VKSAQM, 15 Beta Crescent, Panorama, SA, 5041.

Editor's Note: Computer program listings are photographic reproductions when printed in Amateur Radio (printed in this manner to avoid typographical errors and reduced to conserve space). This is the reason that it is imperative that contributors send computer programs printed with a dark black ribbon. We know of the difficulties of errors. May I make a plea for larger, darker print for such listings in AR for the sake of old timers, such as I. I assume the listing was photo-reduced to permit printing in two columns. Yours faithfully,

COMING TO GRIPS!

Sputnik Record

I am interested in locating an authentic recording of the first satellite to be placed in earth orbit, namely, Sputnik 1. Anybody anyone in the amateur ranks must have made a recording of this satellite.

The recording is required for a talk/presentation I am preparing on the topic Satellites. Anybody interested would be greatly appreciated. Yours sincerely,

Recently I decided a particular make and model of rotator (as advertised) might suit my needs. To obtain a brochure on that item cost three interstate telephone calls (to the one dealer) over a period of four weeks.

A note from the dealer read in stock — $725 including delivery, and installation. Immediately I contacted the dealer (again by telephone) for the transfer of the above sum.

Alan We don't have this item in stock. Perhaps in six or eight weeks?

And . . . the misleading advertising continues. Henceforth, I will remember this costly and time-wasting exercise and can only have scorn and contempt for the advertising and trading activities of this dealer.

COMING TO GRIPS! I am finding Amateur Radio is becoming a much better publication than when I first joined getting it a few years ago. In my opinion, you are really coming to grips with what members require. Keep up the good work.

Ben Ronald VK2EHR, PO Box 125, Blackwood, SA, 5051.

AN INSIDER LOOKED ON THE OUTSIDE

Just browsing through the last few copies of Amateur Radio, I noticed with great interest that there seems to be some concern among members that too many people are not attracted to the hobby. The reason in my opinion is that it is generally too difficult for a real amateur to become a radio operator. After all, an amateur is one who is interested in pursuing an art for the enjoyment of it, rather than being a professional. With readers indulgence I would like to relate my own experiences.

Some 25-years-ago I was in the Australian Regular Army as a professional soldier and wireless operator in the Signal Corps. I was a CW operator with a CW speed of over 50 WPM. But, we didn't have computer programs, nor were we taught anything about electronics. We knew all about aerials, frequencies, dummy loads, microphones and procedures (much more disciplined and stricter than what I hear on the amateur bands), but we learned nothing about resistors, diodes, screwdrivers or soldering irons. This was not necessary, you see, as if something fuzzed a mechanica came and fixed it.

Upon leaving the Army, after operating radio full-time for six years, I wanted to get away from radio and entered the business world. However, a couple of friends are amateurs and, after visiting their shack, I thought of getting into it again for pleasure. Now I have some radio equipment in the Study, and a couple of dipoles in the backyard. I joined the WIA and started this Technical Correspondence Course (a very good one), but the licence seems further away than ever. Why?

Firstly, I operate my own business which keeps me occupied for some 65 hours per week. Then there is my family to whom I wish to devote some...
USE THEM OR LOSE THEM

I believe that the adage, if you don’t use ‘em, you lose ‘em applies not only to muscles and brain cells, but possibly to the WARC-bands as well.

There are some obvious reasons why some amateurs are not making use of the new bands. In the first place, there are many transceivers and transmitters giving admirable service, but not necessary to the WARC-bands. The same would apply to ATUs and linears.

In other cases there are carefully-designed antenna systems which the operators are loathe to modify to take the new bands.

In other cases, I think sheer conservatism and an unwillingness to try something new is probably the basic reason why some never attempt to work the new bands.

All this is regrettable, but what is really shocking is to find that use of the WARC-bands is expressly forbidden in the 1986 John Moyle Contest.

Here we are, advertising to the whole world that VK amateurs will not use the WARC-bands in one of our most important national contests.

I am aware that some exclusion applies to other contests, including some important overseas ones.

I would suggest that those designing the rules for contests and awards take the opposite route and give bonus points for use of these bands, at least for say five years, until they are more widely used by the amateur community.

There seems to be a case for the WIA to establish a new award especially for the WARC bands in order to encourage their use.

A good example was set by those who drew up the rules for the VK5 Jubilee Awards which have been running throughout 1986. There are bonus points towards the award for using WARC bands, a formula which other award-designers could emulate.

It is not very difficult to get-out on a WARC band if your rig includes the frequencies. Most of us have a pole, tower or other structure which will allow us to make use of a dipole sloper for one or more of these bands (try 30 metres for a start). This will not have the span of a beam which would take years of tuning and nurturing over the years, but it is a start and a practical demonstration that we want the WARC bands and are determined to keep them.

Yours sincerely,

Ken Gott VK3AJU,
38A Lansdowne Road,
St Kilda, Vic. 3163.

DISCUSSION PAPER

I have taken the April Editorial to heart and had another look on the Discussion Paper in the February issue. It is a well thought out proposition that deserves careful consideration. One aspect that could be looked at is the operation of so-called gentleman’s agreements.

The main thrust of the proposal appears aimed at recruiting new computer types to the bands. A high-tone sounder and the high-cost receiver. This is probably as it should be and merits investigation but one major area of concern does not apply.

There are two aspects involved — low cost and ease of acquiring equipment, plus use of Morse Code as a communication medium. These two can be brought together by modifying a simple transmitter such as that by Drew Diamond on page 20, is a much easier starting point than some of the rigs pictured on AR’s covers.

Low Cost — Most children of school-age where we should be, and are, approaching them — do not have a great deal of spending money. Their parents already have steep education expenses and such things as excursions, sometimes interstate, etc. So, expensive amateur equipment is one of the major stumbling blocks to recruitment of a new generation of potential amateurs. Once they leave school they are no longer so accessible.

Morse Code — I can almost hear the cry of protest from some. Please talk to me with a little while. I spent hundreds of hours getting myself to the point where I passed the AOCP — in the first level mode, ie recognition of letters by their dot/dash construction. None of the training I underwent enabled me to get to second mode, let alone third mode recognition. My mind appears capable of quite high speed operation but does not shift easily from the more simple Morse codes. First mode is very tiring. I believe very strongly that the methods generally taught — including by the services and schools — are too complex and do not provide use for others. Some time ago I did a survey of Service Morse Code Schools and could not find one person who knew anything about the process. A couple of people asked me to let them know if I discovered anything. A couple of enquiries overseas did not help. If the services know their average failure rate they can always load their courses to give them the number they want. We cannot afford the luxury.

Summary — Morse Code is a very good, low cost bridge to the band for potential amateurs. Many amateurs who passed the Morse tests did so with a skill that is not a viable one — it takes too much out of them psychologically to be enjoyable.

What is required is to investigate different teaching and learning methods. Perhaps computer centred methods with visual display would help some! Perhaps there is a very simple method just waiting to be discovered. The often-voiced opinion that people who can’t learn Morse are just lazy should be discouraged.

Many amateurs would spend more time on air if they could enjoy sending and receiving Morse Code.

Your sincerely,

Neil Trainor VK3JJ,
133 Bладin Street,
Laverton, Vic. 3028.

At a recent meeting of FAMPARC, a debate was arranged on the Discussion Paper produced by John Ralston. There had been a suggestion that if the paper would like to thank them for the obvious work and effort that went into that article.

However, the general consensus of opinion after the debate was that the proposal is sound and worthy of serious consideration. It requires some modifications that will increase the interest and membership of our hobby, and perhaps some more who would benefit from amateur radio. It is possible that there are thousands of interested persons to whom Morse Code might be a good starting point.

Contrary to several opinions, it is not hard to gain entry into amateur radio — it does however, take a person with character and perseverance and a great will to join the amateur ranks.

Many who have entered amateur radio in the conventional way and are a great asset to the hobby, and no doubt there are many more who would benefit from this medium.

It is a pity that the Discussion Paper was so long and covered so many suggestions, it was nigh on impossible to cover the entire paper in one evening. The debate was very stimulating. At one motion was put that the members present consider the licensing qualifications required by the Department of Communications are adequate for the enjoyment of ham radio and not understanding the sprit of amateur radio, cause a great deal of trouble and disharmony.

The discussion, and subsequent letters have certainly put some points of view, but I feel, looked at the symptoms rather than the causes. Perhaps we do not need more amateurs at any price, ie by twisting their arms. How many do we need? We need more interest and less apathy from many of our present population.

For example, in Tasmania, there are over 500 licence holders. How many of those are active, or listen but do not communicate? How many do any construction or are active in the WIA? Local answers would provide a fair yardstick for the national one.

So what has gone wrong?

The discussion overlooked the impact of development in our society, affecting every facet of our lives. The daily newspapers, full of violence, crime, violence, sex, divorce, alcohol, drugs, etc, which seems to dominate the news. Sunday is now a day of commerce, sport and fun. Like it or not, we are now practically a pagan country. The relevant point is that all this has affected our whole life-style, taming at the very fabric of our society, including amateur radio, and it is no use us pretending we have our heads in the sand. The good old days have gone.

There is so much diverse activity offering that, whether we like it or not, are taking up the spare time of amateurs, it must take its turn with a multitude of other interests or even be replaced. Many would prefer to take a golf club, skis, or a ball and get out and perhaps retire to the local watering hole or go to the weekend shack.

Let us look at amateur radio of a few years ago, before television or computers or too much money interests. How many of you are still licensed? Many of the 14 WPM Morse test was considered somewhat meritorious. Subsequently, a breyn of construction followed, as nearly all our rigs were home-brewed and we were content to use simple, wise test gear. The amateur knew what it was all about with interest divided between construction and operating on air. We had long discussions on air about our gear, one being the quality for the AOPC with 14 WPM Morse test was considered somewhat meritorious. Subsequently, a breyn of construction followed, as nearly all our rigs were home-brewed and we were content to use simple, wise test gear. The amateur knew what it was all about with interest divided between construction and operating on air. We had long discussions on air about our gear, one being the quality for the AOPC with 14 WPM Morse test was considered somewhat meritorious. Subsequently, a breyn of construction followed, as nearly all our rigs were home-brewed and we were content to use simple, wise test gear. The amateur knew what it was all about with interest divided between construction and operating on air. We had long discussions on air about our gear, one being the quality for the AOPC with 14 WPM Morse test was considered somewhat meritorious.
are now obtained appears ridiculous. To take an
examination one finds in some numbers or lists
(lke a lottery) and hopes for some luck. If
successful, all that is needed in some money for a
black box. A far cry from the old days.

Surely, if a thing is worth having, it is worth
working for. Perhaps the real amateur is part of a
dying race. After all, we will decide for the
future of our hobby. This is not a case of leaving
transmitters, ATV, satellite, RTTY or fast data.
These are not within the reach of the youngster,
but the real amateur on the HF bands makes his
call heard, and he can be attained either in kit form or from
commercial sources. If youngsters were asked which
band they preferred I am sure it would be HF.
Why are amateurs so picky about what they want, not
what we want them to have.

Which HF band — 10 metres SSB/FM of
course! It is a natural progression from the familiar
bands. What a challenge to get operational — and
every youngster needs a challenge.

Every novice knows that the theory is not
difficult but the CW 1st! Every novice thinks seriously about the limited exam and most pass It
at their first attempt. The existing novice examination
is not difficult and a couple of months of
application will get anyone an exam pass. To
make the exam easier is not, at this time,
appropriate. If such a proposal does not work,
then make the exam easier, but I believe CW is the
barrier to the younger aspiring amateur, not the
theory. Let us not make it easier for the sake of
numbers, but let us make it a more exciting
licence.

Peter Frederick VK3BSF
61 Ashwood Drive,
Ashwood, Vic. 3147.

SQUABBLING

So, it is time to squabble over licensing again. It has
taken some people a long time to wake up to the fact
that the amateur population is in decline. Some of
us who have been in the education system for
many years have seen that amateur radio is a normal
subject in the secondary school. In fact, they
don't know that it exists. The question should also be
asked why are the many students of electronics
at all levels in TAFE colleges not taking an
interest? There is nothing wrong with amateur
radio as it exists at present.

Electronics has progressed in quantum leaps in
the last 20 years. Sadly, most of the amateur
fraternity have regressed in their ideas about
amateur radio. CB (with all its problems) was the
correct thing that happened to amateur radio in the last
10 years, and now we see people wanting
air. As pirates became licensed CBers when it was
legalised and then took up amateur radio. The key
to this is that they bought their equipment, they
used it and wanted something more. The amateur
fraternity wants all people to sit in classes for up to
a year learning theory out of a book with the
prospect of getting on the bands at a
much later date.

Most amateurs begrudgingly accept the new
blood CB brought to the hobby of amateur radio,
one-the-less, CB is almost always used as a
derivative of the radio frequency. Not unreasonable,
provided the eventual total is not more than
two percent of the total population. This
is because we make amateur radio easier to
understand and more attractive to youngsters. The
distribution is, of course, ideal. I am amazed that a
development of such a strategy is not being
considered by the WIA. What would the result be
of a system that was not affected by the old
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because of the price? With the right form of licensing it could even stimulate the local manufacture of suitable equipment for beginners. Philips is certainly well set up for UHF equipment (eg FM 620).

Drastic changes will be made in the future, otherwise the amateur population will simply die off. Why not implement something along the lines of the Canadian proposal now and be in the forefront of the development of the hobby instead of having the WIA and many other conservative amateurs fighting change until they literally die and in the process kill amateur radio.

Amateurs are allocated just over 1506 MHz of spectrum space. Most of this is now prime space which the current amateur population as it stands, hardly makes an impression on.

The pressure for spectrum space is increasing exponentially. How long will it be before commercial interests and the government start to take a good, hard look at those large slabs of little used space allocated to amateur radio in the VHF and UHF bands, especially?

We call on the Minister for Communications, DOC, the WIA, ARA and all progressive amateurs to work towards a totally new licensing system. A system that takes into account the technology of the 1980s. A system that allows a much greater proportion of the population on the air. A system that is attractive and has relevance to the youth of today.

Signed by:
Preston Technical School.
Chris Hilday VK3JU, Preston Technical School.
(VK3CPRT).
Frans de Bruin VK3KFV, Box Hill College of TAFE.
Greg Segal, GWS Audio/Visual.
Ian Batty VK3SEV, Former Co-ordinator (TV), Moorabbin College of TAFE.
Pete Cosins VK3BPG, Electronics Technology, Box Hill College of TAFE.

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56 CAMPBELL STREET,
BIRCHP, VIC 3143.
PHONE: (054) 92 2224.
**Obituaries**

**ARTHUR L STEHN** VK4IS
Arthur passed away on 16th March at Maleny Hospital, having suffered declining health for some time. He was first licensed as VK42LS in 1966, then obtaining his full call VK4IS in 1968, while at Rockhampton. His other hobbies included photography and woodworking. During his working life he was attached to the Education Department, Meteorology Department and PMG’s Department from which he retired. After retirement, he operated the Montville Model Railway Dome. This is where I first met Arthur in 1980. We became firm friends, then neighbours whilst living at Flaxton.

Arthur was one of nature’s gentlemen. Deepest sympathy is extended to his wife Florence, daughter Denise, and son Ronald. Roy Stephens VK4BS (ex VK3ARS) 4T

**RICHARD KELMAN** VK2EEW
Professor Richard Kelman VK2EEW came to Australia three-years ago to establish the chair of Occupational Medicine at the University of Newcastle. The professorial chair he held was only the second of its kind in Australia. He passed away on 6th April 1986, at the age of 52.

Richard was an affable and friendly man who quickly made friends in the community and within the ranks of amateur radio. He confined his operations to CW in the HF bands. In addition, he was a skilled computer experimenter and programmer.

Richard had a distinguished academic career in the United Kingdom before coming to this country. His qualifications included Master of Science, Doctor of Medicine and PhD. He leaves a wife, Elizabeth, and three adult children to whom we extend deepest sympathy. He will be sorely missed by his many colleagues and friends. Contributed by Tony O’Brien VK2BOA 4T

---

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168 Eigar Road, Box Hill South, Vic.
9128
(03) 283 3381

**Air-Wound Inductances**

<table>
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<td>7”</td>
<td>3007</td>
<td>$7.20</td>
</tr>
</tbody>
</table>

Take the hard work out of Coil Winding — use "WILLIS" AIR-WOUND INDUCTANCES

**William Willis & Co. Pty. Ltd.**
98 Canterbury Road, Canterbury, Vic. 3126
PHONE: 836 0707

**Solar Geophysical Summary — February 1986**

Solar activity for February was dominated by two regions which returned to the visible solar disc late in January. The regions produced a sequence of energetic solar flares, including X class events on 4th and 6th.

**Feb 1**

Class M1 2054-2115 UT Effect: times

**Feb 4**

Class M1 1018-1054 UT
Class X1 0732-0805 UT

**Feb 5**

Class M1 1232-1231 UT

**Feb 6**

Class X1 0618-0707 UT

**Feb 7**

M1 0947-1126 UT

**Feb 11**

M2 0328-0413 UT

**Feb 13**

M1 0102-0419 UT

**Feb 14**

M1 0902-1028 UT

**Feb 15**

M2 1016-1300 UT

**Feb 16**

M3 1304-1316 UT

The regions also produced a sharp rise in the 10 cm flux levels which peaked at 103 on 5th. This flux value is the highest for any day since 5th July 1984. The regions had disappeared over the western edge of the sun by the 15th and the flux levels dropped to low values.

The first of the previously active regions reappeared on the visible disc on the 26th and produced a rise in the 10 cm flux late in the month.

**10.7 cm Flux**

<table>
<thead>
<tr>
<th>Date</th>
<th>Flux</th>
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<tbody>
<tr>
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<td>10/2</td>
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<td>16/2</td>
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<tr>
<td>22/2</td>
<td>23</td>
</tr>
<tr>
<td>25/2</td>
<td>21</td>
</tr>
<tr>
<td>28/2</td>
<td>20</td>
</tr>
</tbody>
</table>

Average = 28.3. Yearly average = 27.4.

**Geomagnetic Activity**

7/9/2: The geomagnetic field became disturbed towards the middle of the 7th and was at major storm levels by the end of the day. 8th was one of the most disturbed days in the last 25 years. The early part of the 9th was also very disturbed but weakened towards the middle of the day. A = 57, 208, 74.

14/2: The field was active 1400-2100 UT.

A = 25.

21-28/2: The field was generally disturbed for the entire time, the worst periods being 00-0200 and 14-1800 on 22nd and 00-1800 on 23rd. A = 22, 23, 25, 27, 29, 31, 32, 34, 37, 40.

The magnetic disturbance of 7/9th was a particular noteworthy feature of the month. It is difficult to compare disturbances, this event was large by any standards and was probably the largest since November 1960. It coincided with reports of auroral sightings from much of mainland Australia. Sightings ranged from just north of Sydney, Northern New South Wales and around Brisbane. This event was almost certainly caused by the X class flare at 0625 UTC on the 6th.

The A index average more than doubled from 11,5 in January to 23,4.

**Amateur Cartoons**

The name Phil Gildersleeve W1CJD, would probably mean little to most amateurs but to the readers of QST and some ARRL ancillary publications, from 1927 until the 1960s his work would be very familiar. Phil was known simply as "Gil" and was responsible for many hundreds of humorous cartoons which appeared in ARRL publications.

A new ARRL book, titled "Gil" has reprinted the best of these cartoons.

Should be most interesting for the old time subscribers to QST.
FUTURE TRENDS IN SOLAR ACTIVITY

Solar Cycle number 21 is now approaching its end as the yearly-averaged sunspot number drops to values typical of solar minimum conditions. At this time, it is appropriate to ask what the next solar cycle will look like. The subject has been (as usual) the centre of keen debate for a number of years and (as is also usual) there is no consensus view whatsoever. In particular, estimates of the maximum sunspot number of the next solar cycle vary wildly — from as low as 50 to as high as 200.

IPS has prepared a prediction based on the most highly regarded techniques of the papers presented at the Solar-Terrestrial Predictions Workshop held in Paris during 1984.

It predicts the minima of Cycle 21 late in 1986 and Cycle 22 rising to a peak of 130 in mid-1990 and falling to around 10 in 1998. Cycle 21 went into the history book as the second highest since records began. I guess we will just have to be patient and see what happens. In the meantime, just keep an ear on the daily reports to find the best periods. The DX is there even on 28 MHz for those who are in the know.
THOUGHT FOR THE MONTH
Silence is better than meaningless words.

PORTABLE PHONES SOON
A new mobile telephone service, in the form of low powered pocket phones and vehicle mounted units, being introduced in Australia will take personal communications into the 21st century. The high capacity cellular radio system with 600 channels at 800 MHz will begin in Sydney in March 1987, and progressively spread to other areas.

COMPLETE WORKSHOP SERVICE MANUAL: or phone for more details. (See series 1) teleprinter. Lyte VKO1KL. Ph:(03) 555 2601 (AH)

BEARCAT 210: or similar. In good working condition. Ph:(03) 211 6406.

WIRELESSES: 811A tubes, with sockets for use in a linear. VK0JM. Ph:(03) 221 4972.

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EXCELLENT RADIO LOCATION: 15 min from Mudgee. 4 bedroom fibro cottage, 2 years old. Power, phone connected, school bus at gate. Set on 55 acres. Fully fenced with 11.1km post and rail fence. Includes 1 weekender, 2 x 5000 gal concrete water tanks & 1 x 1000 gal tank, 50 foot free-standing radio tower with 56m-long Yagi & 5-band ground plane choke. Price $25000. VK0HJ, QTHR. Ph:(03) 74 5370.

HELIX LF-4D-50A: unused length of 8m for 8m. Brand new of 6-cstrip NCDIS bat at $4.50 each. Ph: (071) 817 2652.

KENWOOD TR-5500 UHF ALL MODE TCVR: In immac cond complete with mic, mlbracket, manual, no mods, no bugs. Original SWR from 500 MHz to 1296 MHz with 1296 MHz SWR meter to match above. $40. Max VK2GGE, QTHR. Ph:(043) 92 4900.


SHACK CLEARANCE: Icom 701 in mint cond with IC-701PS, desk & hand mics, manuals, just serviced by icom. $620. Yaaas 227TRB 2m rig, with scan mic, manual. $225. ATTN: L141 Li-709 1.25m, $150. Shure 444D mic. $60. Shure 444 mic. $100. Shure 444 mic. $75. 50-5000W Trendy SWR/PWR meter. $20. Drake TFF2, 2kv output. 1296 MHz. 1985, 350W. Yan. $50. Ian Wilkinson VK2KPB. Ph:(09) 82 8935.

TRAPPED VERTICAL ANTENA: VSLR for 10-15m (D-430S). $60. Bob VK2CNK. Ph:(03) 265 8064 (BH) or (04) 43 7672 (AH)

V2000 COMPUTER: P/2 etc in orig packing with DASE RTTY interface + leads. $120 ONS. 16k V2000 memory expansion with controller on circuit board. $120. Professor Morse keyer & random Morse sender for practice to 50 WPM. $100. VK2AOO, QTHR. Ph:(056) 72 9216.

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ASACA B&W CAMERA: with variable lens, circuits & booklet. Also monitor. Used for the of the Commodore 64 video system or security watch. Mint cond. $350. Ph:(03) 725 9295.

DAIWA 7600X HEAVY DUTY ROTATOR: with pre-set controller, never used; brand new. $350 ONS. Must sell. Steve VK3DGL, QTHR. Ph:(050) 37 3391.

HAMPAC MODIM MOD For APPLE COMPUTER: Complete with instructions & software. As new $100. Andrew VK3VJP. Ph:(03) 555 9393.

KENPRO ELEVATION ROTATOR: Type KR-500, 28V AC, new in box. $300. Rolex Airman’s watch, Oyster Perpetual, SS GMT Master Superlative Chronometer, official timepiece. $150 ONS. Ph:(03) 725 9295.

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V5JR for 1040m CR-415 Pr Brian. Ph:(08) 389 1204 Inspection by appointment only.

SIEMENS MODEL 100 TELEPRINTER: with local & tape tx & rx WANTED, 2 rolls of paper, in Immac cond, in new black label, plus manual, new ribbon. All documentation incl. $60 ONS. Mike VK3DJK. Ph:(03) 339 4995

YAESU JD-148 DESK MIC: new & unused 8 pin. $35. SW 10/12psw, $150. Beck Computer Desk, new. $70. 20 new, unused floppy disks. $50 the lot. Charlie VK3YVC. Ph:(08) 258 0320

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Low Loss Foam Double Shielded Coaxial Cable

Loss in DB/30 Metres

<table>
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AF Series Cable & N Connectors

Cable N Connectors

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<td>$13.70 ea</td>
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</tbody>
</table>

HG-VHF SWR-Power Meter

Compact, two power ranges, 0-12 Watts & 0-120 Watts, switchable. HF-VHF with lighted meter. $65 plus $8 P & P.

New Debeglass Wire

Now, you can have your tower without having to break the wires with dozens of egg insulators. Our Debeglass wire alternative is made using continuous filament fiberglass yarn jacketed in UV stabilized vinyl chloride. Compare the figures below.

<table>
<thead>
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<th>DB-4 (4mm)</th>
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<td>75 6.9</td>
</tr>
<tr>
<td>Sleeper</td>
<td>25 5.5</td>
</tr>
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</table>

New HS-VK5 5 Band HF Vertical

Fully self supporting & complete with self supporting loaded radials. $299 and $14 P & P.
ICOM Introduces the IC-R71A 100KHz to 30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional). This easy-to-use and versatile receiver is ideal for anyone wanting to listen in to worldwide communications. Demanding no previous shortwave receiver experience, the IC-R71A will accommodate an SWL (shortwave listener), Ham (amateur radio operator), maritime operator or commercial operator.

With 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's, scanning, selectable AGC and noise blanker, the IC-R71A's versatility is unmatched by any other commercial grade unit in its price range.

Superior Receiver Performance. Utilizing ICOM's DFM (Direct Feed Mixer), the IC-R71A is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

Passband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.

Keyboard Entry. ICOM introduces a unique feature to shortwave receivers - direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

VFO's/Memories. A quartz-locked rock solid synthesized tuning system provides superb stability. Three tuning rates are provided: 10Hz / 50Hz / 1KHz.

32 Tunable Memories. Thirty-two tunable memories, more than any other general coverage receiver on the market, offer instant recall of your favorite frequency. Each memory stores frequency, VFO and operating mode, and is backed by an internal lithium memory backup battery to maintain the memories for up to five years.

Options. FM, synthesized voice frequency readout (activated by SPEECH button), RC11 wireless remote controller, CK1 DC adapter for 12 volt operation, MB12 mobile mounting bracket, two CW filters FL32 − 500Hz, and FL63 − 250Hz, and high-grade 455KHz crystal filter FL44A.

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Keyboard Entry. ICOM introduces a unique feature to shortwave receivers - direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

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VOL 54, No 7, JULY 1986

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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Antenna Activities
WIA Convention Report
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CQ

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Inset: The Remembrance Day Trophy which is presented to the winning Division after the contest results are announced. See Contest Column for a history of the Trophy. Photograph by Ken McLachlan VK3AH

The Remembrance Day Contest is the Big One on the VK Contest Calendar, and it is almost that time of year again. This month's Contest Column features the rules for the 1986 Contest. Ian VK5QX, also takes some time to explain the reasons for this Contest and gives an insight into the life of the RD Trophy.

It is always interesting to look ahead and wonder what life will be like a decade or so ahead from the present. Alan VK4SS, the VK4 Historian, looks at the year 2036. Alan located an article in a 1936 Amateur Radio and it is interesting to read what he considered how amateur radio may be, 50 years hence when one considers how the majority of radio equipment was home-brew in 1936.

Tony G4FAR, AR's correspondent in London, has written to say that VHF and UHF licensees in Britain now have permission for Morse transmissions as a permanent feature of their licenses. Last year, an experimental trial revealed that temporary variations of the Class B licence were issued and this experiment has proved so successful that the DTH has granted the concession as a permanent feature.

Impossible to work 42 countries on six metres from Australia? No. Eric VK5LP, includes the full listing of the 42 countries worked by VK6SB, on six metres from Darwin and also includes the dates of the initial contacts so you may check your logs and see how conditions were on six from your QTH on the particular dates.

DEADLINE

All copy for inclusion in the September 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic, 3162, at the latest, by 9am, 21st July 1986.

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Those of you who take the trouble to read these bursts of vaguely relevant verbiage have probably noticed that every so often I have pointed out historical occurrences of interest to us as radio amateurs. The editorial banner has had titles in the past such as "More History" and "More Anniversaries." And now I am impelled to do it again! This year of 1986 has not only been distinguished by the return of Halley's Comet, regrettably not as a spectacular as in 1910, but by several other notable anniversaries as well.

Firstly, as our colleagues in VK5 are reminding us so well, this is the sesquicentenary of the State of South Australia. All this year we have the opportunity to work VK5JSA, and VK5s generally, towards the acquisition of the Jubilee 150 Award. The full details were published last October. This is only one of many amateur activities, and State-wide celebrations as well, which will reach their peak on 28th December, the 150th anniversary of the Proclamation of the Colony of South Australia by its first Governor, Captain John Hindmarsh of the Royal Navy.

Exactly half as old as South Australia, our own Royal Australian Navy is this year celebrating its 75th birthday. The RAN is just over one year older, and evolving together as they have, the two organisations have always shared a common interest in radio communication, albeit from somewhat different viewpoints. Many of our members were or are members of the Navy also, their amateur radio interests no doubt contributing to their professional competence. There is at least one Admiral among our ranks!

Fifty years ago, on 2nd November 1936, the world's first regular public television broadcasts began, from the Crystal Palace, London. The expansion of television since then has been truly fantastic in all respects, technical, information and entertainment. Global television coverage of almost everything has become commonplace, bringing us all much closer to that "one world" of which many have dreamed for centuries. Australia joined this electronic revolution just over one year older, and evolving together as they have, the two organisations have always shared a common interest in radio communication, albeit from somewhat different viewpoints. Many of our members were or are members of the Navy also, their amateur radio interests no doubt contributing to their professional competence. There is at least one Admiral among our ranks!

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Abridged from Electronics News, p23 - April 1986

Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley, Vic. 3150

AMATEUR RADIO, July 1986 - Page 3
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Dear Sir

I refer to my letter of 24 April 1986 in which I indicated that the time limit applied to exemptions for partial examination qualification was to be removed.

You will recall that, since November 1982, persons who obtained partial qualification at examinations for amateur certificates of proficiency have been granted a two year exemption in those subjects passed. I am pleased to advise that this situation has been reviewed and that the two year limit no longer applies.

As from 18 February 1986, all candidates who obtain partial qualification at amateur examinations are granted permanent exemption in those subjects passed. A permanent exemption is also extended to those persons who at the time of the February 1986 amateur examination (i.e. 18 February 1986) possessed a valid exemption under the previous 2 year provision.

The responsibility for demonstrating to the Department that a part qualification was previously obtained rests with the applicant. Original documents must be supplied at the time of application for a certificate of proficiency, copies will not be accepted.

It would be greatly appreciated if you could arrange for the information outlined to be promulgated in the normal manner available to the Institute.

Yours sincerely

[Signature]

D Hunt
Manager Regulatory
Operations Branch
Radio Frequency Management Division
Canberra

23 May 1986
A MULTI-BAND DIRECTIONAL ANTENNA

The following extract is from an original article by E Gutkin UB5CE, and was translated from RADIO Nos 1-3 1985, by Robert Hancock VK5AFZ. It details the construction and electrical characteristics of a multi-band antenna system comprising 10, 15 and 20 metres interlaced Yagi-type beams and a 40 metre dual active radiator wire antenna as shown in Figure 1.

The 7 MHz elements are supported by insulating extension sections on the ends of the 14 MHz reflector and director elements. Upright rods, with egg type insulators, support the top of the radiating elements in a truncated rhombus configuration.

The lengths of D7 and R7 for the design frequency of 7.050 MHz are 21.7 and 22 metres respectively, consisting of two symmetrical halves as shown in Figure 1. The dimensions of the other elements are in Table 1.

Feedline matching to the Yagi elements is by means of T-match sections as shown in Figure 2. Dimensions of the T-match constructions are shown in Table 2 (all dimensions are in millimetres).

Matching to the 7 MHz elements is carried out with a symmetrical auto-transformer and capacitor network, as shown in Figure 3. The auto-transformer is wound in four parts, twisted together on a ferrite core (Russian type)

Table 1.

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>LENGTH in mm</th>
<th>SYMBOL (Ref 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 MHz Director</td>
<td>8330</td>
<td>D1</td>
</tr>
<tr>
<td>14 MHz Driven Element</td>
<td>10180</td>
<td>A1</td>
</tr>
<tr>
<td>14 MHz Reflector</td>
<td>10480</td>
<td>R1</td>
</tr>
<tr>
<td>21 MHz Director</td>
<td>6550</td>
<td>D2</td>
</tr>
<tr>
<td>21 MHz Driven Element</td>
<td>7020</td>
<td>A2</td>
</tr>
<tr>
<td>21 MHz Reflector</td>
<td>7220</td>
<td>R2</td>
</tr>
<tr>
<td>28 MHz Director</td>
<td>4640</td>
<td>D3</td>
</tr>
<tr>
<td>28 MHz Driven Element</td>
<td>5330</td>
<td>A3</td>
</tr>
<tr>
<td>28 MHz Reflector</td>
<td>5180</td>
<td>R3</td>
</tr>
</tbody>
</table>

Table 2. T-Match Dimensions (Refer Figure 2).

<table>
<thead>
<tr>
<th>BAND</th>
<th>LENGTH (t)</th>
<th>ROD DIAM (d)</th>
<th>SEPARATION (h)</th>
<th>75 ohm SECT (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 MHz</td>
<td>1160</td>
<td>8</td>
<td>140</td>
<td>6980</td>
</tr>
<tr>
<td>21 MHz</td>
<td>1660</td>
<td>8</td>
<td>80</td>
<td>4680</td>
</tr>
<tr>
<td>28 MHz</td>
<td>1150</td>
<td>30</td>
<td>75</td>
<td>3400</td>
</tr>
</tbody>
</table>

The 14 MHz matching section has two 100 pf capacitors inserted at points A and A'.
The winding is constructed by twisting together 12 multi-wire cables of one millimetre diameter in PTFE insulation and forming four turns on the toroidal core. The ends are connected as in the circuit diagram making sure to use minimum lead lengths to maintain a compact construction.

The auto-transformer has 16 turns in the output section and eight on the input section, giving a transformation coefficient of 0.5. This may be increased if necessary by reducing the number of windings on the output section, e.g., 15 turns equals 0.533, 14 turns equals 0.57.

Each of the tuning capacitors consists of a 5-15 pF variable plate condenser in parallel with a fixed capacitor (82 pF for the director and 93 pF for the reflector). The matching unit is housed in a plastic box 150 x 100 x 50 mm internal dimensions.

Table 4. Directional Characteristics of 7 MHz Antenna.

<table>
<thead>
<tr>
<th>AZIMUTH (°)</th>
<th>REL. POWER (%)</th>
<th>AZIMUTH (°)</th>
<th>REL. POWER (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>75</td>
<td>195</td>
<td>6</td>
</tr>
<tr>
<td>60</td>
<td>25</td>
<td>210</td>
<td>2</td>
</tr>
<tr>
<td>75</td>
<td>10</td>
<td>225</td>
<td>3</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>240</td>
<td>10</td>
</tr>
<tr>
<td>105</td>
<td>13</td>
<td>255</td>
<td>11</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>270</td>
<td>10</td>
</tr>
<tr>
<td>135</td>
<td>5</td>
<td>285</td>
<td>10</td>
</tr>
<tr>
<td>150</td>
<td>3</td>
<td>300</td>
<td>23</td>
</tr>
<tr>
<td>180</td>
<td>7</td>
<td>330</td>
<td>75</td>
</tr>
<tr>
<td>240</td>
<td>0</td>
<td>360</td>
<td>4</td>
</tr>
</tbody>
</table>

The directivity pattern of the 7 MHz antenna is shown in Table 4.

NOTE: The above article was translated by Robert Hancock VK5AFZ, 30 Tottenham Court Road, Port Elliot, SA, 5212. If any readers would like further explanations of the article please write to Robert, please include an SASE.
WHERE DO I BEAM?

The following program was written for the TI-59 calculator, but it should easily convert to other programmable units.

Just what is the distance between your station (or receiver) and the station you’re working (or receiving)? No! Not the road distance, the direct shortest distance which shows up on a Mercator Projection map, such as a Great Circle Distance. What heading would the beam best be set to? Both questions can be answered by this program.

The formulae are:

\[
\text{Distance (in degrees of latitude) = arc \cos \left[ \sin (\text{lat}) \sin (\text{lat}_1) + \cos (\text{lat}) \cos (\text{lat}_1) \cos (\text{lng}_1 - \text{lng}) \right]
\]

To convert this to nautical miles, multiply by 60, to Statute (ordinary) miles, multiply by 68.98, to kilometers by 111. I couldn’t track down these conversion factors after the first in my books, so had to work them out!

\[
sin (\text{lat}_{1}) \cos (\text{distance in degrees}) \sin (\text{lat})
\]

Beam Heading = arc \cos (\text{sine (distance in degrees) cos (\text{lat})})

If the sine of lng, lng, is < 0, then heading is 360-degree calculated.

Eastern longitudes and southern latitudes are entered as negative, western longitudes and northern latitudes are entered as positive.

Coding for the TI-59 calculator follows. Writing these formulae up in BASIC for a home computer does not seem too great a programming challenge. In these formulae, latitude and longitude of your transmitter or receiver are abbreviated as lat, and lng, and latitude and longitude of the station heard are lat, and lng.

In the program which follows, lat is stored in memory-one, lng, in memory-two, lat, in memory-three, lng, in memory-four. Distance (in degree format) is stored in memory-five.

Headings as calculated is stored in memory-seven while the test following the calculation is performed.

In many cases, the only information available about latitude and longitude of transmitter/receiver location or of the station heard location will be found expressed in degrees and minutes from the Gazetteer of an atlas. This program converts the angle from the degree-minutes-seconds format to the decimally-divided format used in calculation before storing it in memory.

Enter TX/RX latitude in ddd.mm(ss) form into display, Key A accesses a subroutine which converts this format into decimally-divided degrees before storing the result in memory-one.

Then enter TX/RX longitude (lng) into display in ddd.mm(ss) form, then into memory-three using the program on Label B. Station heard latitude and longitude (lat, and lng,) are put into memory-three using C and memory-four using D.

Distance is calculated by subroutine labelled E, and heading by a subroutine labelled E'. Before using the program, enter TX/RX

```
latitude into the display at this point. The latitude is keyed in in ddd.mm(ss) form.
Coding Comment
000 76
001 11 Label A
002 88 converts from ddd.mm(ss) form into decimally-divided
003 42 degrees form
004 01 store in memory-one
005 92 end of subroutine, restores control to keyboard.
006 76 Key in lng, the longitude of transmitter or RX site.
007 12 Label B, used to enter TX/RX longitude, lng
008 88 converts from ddd.mm(ss) form to decimal form
009 42 store in memory-two
010 02 end of subroutine, restores control to keyboard.
012 76 Key in latitude of station heard in ddd.mm(ss) form. Enter using procedure under Label C
013 13 converts latitude from ddd.mm(ss) form to decimal form
014 88 store in memory-three
015 42 end of subroutine
016 03 Key in lng, lng, the longitude of station
017 92 heard in ddd.mm(ss) form
018 76 store in memory-three
019 14 end of subroutine
020 88 Key in latitude of station heard in ddd.mm(ss) form
021 42 Label D converts from ddd.mm(ss) form to decimal form
022 04 store in memory-four
023 92 end of subroutine.
024 76 Label E for the Distance
025 15 calculation
026 53
027 53 recall memory-one, TX/RX
028 43 latitude take its sine
029 01 multiply by
030 38 recall memory-one, TX/RX longitude
031 65 take its sine
032 43 multiply by
033 03 recall TX/RX latitude
034 38 take its sine
035 54 +
036 85 recall TX/RX latitude
037 53 take its cosine
038 43 multiply by
039 01 recall station heard latitude
040 39 take its cosine
041 65 multiply by
042 43 recall station heard longitude
043 03 take its cosine
044 39 multiply by
045 65 recall station heard longitude
046 53 take its cosine
047 43 multiply by
048 04 recall station heard longitude
049 75 take its cosine
050 43 multiply by
051 02 recall station heard longitude
052 54 take its cosine
053 39 multiply by
054 54 recall station heard longitude
055 54 arc cosine
056 22 recall station heard latitude
057 39 take cosine of result
058 42 arc cosine
```

Ian Crompton VK5KIC
9 Craig Street, Richmond, SA. 5033

Following are two examples:

Moorabbin to Yarrum Display
Enter latitude of Moorabbin -37.9833333
-37.9833333
Enter longitude of Moorabbin -145.12
-145.12

059 05 store distance in degrees’ in memory-five
060 92 end of subroutine
061 32 to get distances in nautical miles, Statute (ordinary) miles, or kilometres, multiply the contents in memory-five by the appropriate factor. That was being done, in a lengthy way, in the gap in the program here.
073 76 Label E', used to calculate the heading, given the input data and the value just calculated.
074 10 ( recall station heard latitude
075 53 take its sine
076 53 minus
078 03 recall memory-five, distance just calculated
079 38 take its cosine
080 75 multiply by
086 43 ( recall TX/RX latitude
088 38 take its sine
089 43 )
090 54 divide by
091 55 ( recall distance in degrees’ take its sine
094 05 multiply by
095 38 recall TX/RX longitude
096 65 take its cosine
100 54 )
101 54 arc cosine
102 22 store result in memory-seven
106 00 put 0 into test register
107 32 ( recall station heard longitude
108 53 take its sine
110 02 multiply by
111 75 recall TX/RX longitude
112 43 minus
113 04 recall station heard latitude take its sine
114 54 )
115 38 take sine of result
116 22 test if <0
117 77 if so, go to 125
119 53 121 07 recall calculated heading
122 92 end of subroutine
123 68 no operation (filling!)
124 68 no operation (filling!)
125 43 recall calculated heading
126 07 change sign
127 94 plus
128 85 recall calculated heading
129 03 end of subroutine, end of calculation
130 06
131 00
132 95
133 92
360=
134 92
end of subroutine, end of calculation

Page 8 - AMATEUR RADIO, July 1986
VOYAGE OF ST JUPAT

According to reports, the two young Hungarian engineers, Nandi and Joe, who are on a round-the-world navigational trip, (see initial report in AR, February, page 16), were expected to sail into Sydney Harbour on about 20th May 1986.

They left Capetown, South Africa, on 12th March 1986. Their sailing course along the Roaring 40s took them steadily eastward. They have battled huge seas, dampness, the sea-water and salt, sea-sickness, shortage of fresh food and they even had problems with a poorly functioning generator which is used to charge their radio batteries. They were no doubt glad to set foot again on terra firma.

On board the 30 feet, four ton (9m, 4 tonnnes) vessel they have a small FT7, 50 watt amateur radio station which they use with the call sign ZL1BIM, from Auckland, New Zealand, has been supplying them with up-to-date detailed weather reports on their regular daily scheds on 14 MHz. Roger VK2XJ, Peter VK2OQ and Steve VK2PS have also been in daily contact with them on the 20, 40 and 80 metre amateur bands.

The duo intend to stay in Sydney for a few months to attend to the necessary maintenance and repairs to their boat and equipment. Weather and winds permitting, they will then continue across the Pacific towards the Americas. Hopefully, we will have a full report of the boys arrival in Sydney in the next issue of AR.

Contributed by Stephen Pall VK2PS

JUMBLED? ? ?

Unfortunately, one line of Novice Notes, page 25, June issue got completely jumbled at the printers. The offending line is the first line, bottom right hand corner. This line should be at the bottom of the second column, same page.

The paragraph should read thus:

If only low power operation is contemplated, C1 may be replaced by C2, the resistor. These are not too difficult to find. For higher power operation, C1 must have wide spaced vanes. A dual-gang 200 or 250 pF unit would be fine for this. C2 may be a dual-gang 415 pF BC type, even for power levels to the legal limit. The shafts of these two capacitors are nominally at RF earth potential, so no special insulating precautions are necessary.

Please delete the offending line, right hand side, below Figure 4:

Apologies are extended for the confusion caused.

QSP

AIRCRAFT RESTORATION

Probably in years to come, arguments will arise as to which aircraft was the best in air battles of the Second World War. With such a variety of operational requirements, that argument may never be resolved, although one aircraft did stand out in a number of aspects.

Enter the De Havilland MOSQUITO. Constructed of Balsa wood sandwiched between plywood layers, powered by a pair of the remarkable Rolls Royce MERLIN engines, it was fast and manageable. It carried a considerable bomb load for its size, was used as a bomber, fighter, photo reconnaissance, night fighter and passenger carrier.

It was used by the navy as the SEA MOSQUITO and six different air forces. It was deployed as far afield as Asia and the Pacific war theatres, although it's maximum effort was in the European theatre, where it caused many a Luftwaffe pilot's heart to beat faster than normal.

A total of 7600 Mosquitos were built by a number of factory units in England, to the design perfected by the De Havilland Aircraft Company.

In Australia, the De Havilland factory at Bankstown, New South Wales, produced 212 of the total for the Royal Australian Air Force squadrons in the Pacific war theatre. The majority of Australian production was known as the Fighter Bomber Mk 40, but a number of the Mk 40 were converted to Photo Reconnaissance Mk 41, and this forms the basis of the story. The Hawker De Havilland factory at Bankstown, in this year, 1986, some 40 years after its initial production, Mosquito A52 — 319, a Mk 41, is undergoing a complete restoration.

Mosquito A52 — 319 occupied a proud position outside Perth Airport for many years after the War. As the years passed, the extreme elements of the Australian sun and moisture caused considerable deterioration to the wooden air frame.

Vandals and collectors caused further loss and eventually 52 — 319 was towed behind the hangars to further neglect. An overseas buyer built a massive frame and planned to shift A52 — 319 to America. He succeeded in shifting it to Melbourne where, in 1979, the Canberra War Museum came to the rescue of this sorry aircraft and purchased it for restoration and inclusion in the Museum Aircraft Collection.

The De Havilland factory again played a vital part in the life story of A52 — 319 and today it nears completion under the hands of dedicated people.

John Chadwicke of the factory is the restoration project officer, on behalf of the War Museum, and although he can manage the restoration of the airframe and the engines, there is a complete lack of radio equipment. It is hoped that amateurs throughout Australia may be able to help with the construction of this famous war-bird.

Contributors will receive recognition of their efforts.

Parts required are:

Marconi T1154 transmitter; R1155 receiver and aerial coupling switch.

Cables and plugs for the T1154, R1155.

A left/right hand indicator for DF operation — this fits in the instrument panel.

The Loran A/P9 navigation equipment.

The AC inverter 28 volt input 115VAC 400 Hz output — it has the voltage control on top. This is about 12 inches long by 12 inches high (about 30 cm).

Rebecca set SCR695 (3C966A).

A four-channel controller for the VHF transmitter/receiver SCR 522/TR 5043 with plugs and cables.

A restored SCR 522 and PE 945 rotary power supply has been obtained.

An Air Ministry brown Bakelite Morse key.

Two sets of Air Ministry headphones.

Any other instrument parts associated with the Mosquito.

For further information contact John Chadwicke at Hawker De Havilland Training School, Ladbroke Street, Milperra, NSW. 2214, or phone Keith Muller, Department of Aviation Transmitters, Llandilo (02) 628 9777.

Mosquito A52 - 525 of No 1 Squadron, RAAF
PRACTICAL EARTH RESISTANCE MEASUREMENTS

George Cranby VK3GI
PO Box 22, Woodend, Vic. 3442

A simple, but fairly accurate and widely accepted method of determining the resistance of an earth rod.

Having read with great interest the article Aerials and Earths by John Gazard VK5JG, in the May issue of Amateur Radio, I thought it may be useful to bring to readers notice a simple, but fairly accurate and widely accepted method of determining the resistance of an earth rod.

Place three similar earth rods, at least four to five metres apart, in the form of a triangle, and to an equal depth. Measure the resistance between each pair of rods.

The best equipment for this would be an Earth Megger or similar, but access to this type of equipment may be a bit difficult. The next best method is the application of a measured voltage between each pair of rods, measuring the current and calculating the resistance. If DC — say, from a car battery — is used, two readings must be taken by reversing the polarity, and the average of the two readings must be used.

Based on Figure 1, the following reasoning leads to the final formula:

\[
\begin{align*}
R_X & = R_1 - R_B \\
R_Y & = R_2 - R_C \\
R_Z & = R_3 - R_A \\
R_X & = \frac{R_1 + R_3 - (R_B + R_C)}{2}
\end{align*}
\]

Based on Figure 1, the following reasoning leads to the final formula:

\[
R_X = \frac{R_1 + R_3 - (R_B + R_C)}{2}
\]

I have successfully used this method to measure ground conductivity of widely varying soils. In one extreme case (in far north Queensland), I found the resistance of an HV earth rod to be 3400 ohms. This effectively negated the protective ability of the HV fuse system. Even the resistance of an abandoned two inch (50mm) water bore pipe (sunk to 20 metres), gave a reading of 240 ohms! (Soils 'aint Soils, Sol . . .! Tech Ed). These field measurements were done with a car battery, voltmeter and ammeter.

Once the resistance of a single earth rod has been established, the graph in Graph 1 can be used to estimate the effect of multiple rod earths for a number of rod configurations. It can be seen that the total resistance does not diminish in the proportion of the number of rods, and that the reduction, in absolute terms, becomes almost insignificant for more than four rods.

Diameter and depth of the rods have some effect on the earth resistance, but their discussion is beyond the scope of this general note.

Further reading on the subject may be found in the excellent book Earth Resistance by G F Tagg, published by George Newnes Ltd, in 1964 and, in the fundamental study by H B Dwight Calculation of Resistance to Ground in the AIEE Transactions, December 1936.
ANDREWS COMMUNICATIONS SYSTEMS
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cable), 0.15uV cn SSB, transceiver, inc mic.
Optional 70cm $460 (inc 7018 GR*), 6m $360 (inc
Full 12 months warranty on our Yaesu.

KENWOOD TS-440S ... $1550
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YAESU FT-726(R)... $1699
Includes 2m, mic, 2 x 208Y Yagis. Why pay $1749?
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cable), 0.15/iV on SSB, transceiver, inc mic.
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Full 12 months warranty on our Yaesu.

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SHOP 7, GARDEN ST, MAROUBRA JUNCTION, SYDNEY NSW
THE MAIL ORDER SPECIALISTS. Write to: P.O. BOX 33, KENSINGTON, NSW 2033
The theory of this unit is that of the L network, but the series reactance is divided.

The centre fed aerial with tuned feeders is probably the best solution for amateurs requiring an all band HF aerial system, tailored to fit a suburban or country house block. The aerial and feeders of these systems can be any length to suit the block and building layout. The lack of resonant lengths is corrected with an Aerial Coupling Unit designed to match the 50 ohm unbalanced transmitter output to the balanced feeder input.

I have constructed an ACU which is simple and suits my situation; it could be useful for others with similar problems.

The theory of the unit is that of the L network (Figure 1), but the series reactance \( A \) is divided, half in each leg (Figure 2) and a balun is used to couple the network to the transmitter. The modified version needs a name — I suggest Lazy Pi (F).

The transmitter is coupled to the ACU by a 50 ohm to 50 ohm balun or a 50 ohm to 200 ohm balun via 50 ohm coaxial cable, any length. If the input to the ACU is through terminals a-a, it will match a resistance \( N \) times the output resistance of the balun (50N or 200N). If the ACU is reversed and the terminals b-b used as input, the unit will match resistance 50 divided by \( N \) or 200 divided by \( N \).

The reactances must be opposite kinds; it is most convenient to make \( B \) a variable condenser and \( A \) a tapped inductor. To match resistance \( R_T \) greater than the balun resistance \( R_B \), the reactance of \( A \) must be:

\[
X_A = \pm R_B \sqrt{N-1} \]

and the reactance of \( B \):

\[
X_B = \pm \frac{R_B}{\sqrt{N-1}} \]

where \( N = \frac{R_T}{R_B} > 1 \)

To match a resistance less than \( R_B \), the reactance of \( A \) must be:

\[
X_A = \pm \frac{R_B}{\sqrt{N-1}} \]

and the reactance of \( B \):

\[
X_B = \pm \frac{R_B}{N} \]

where \( N = \frac{R_B}{R_T} > 1 \)

Component \( B \) in my unit is a variable condenser, 30 pF to 240 pF supplemented with two fixed condensers, 150 pF and 400 pF switched in parallel as required. This provides three capacity ranges 30 to 240, 180 to 390, and 430 to 640 pF. With this capacity range and 50 ohm input to a-a it is possible to match resistances from 70 ohms to 2000 ohms and with 200 ohm input to b-b matching loads as low as 5 ohms is possible.

There are complications:

a. The feeder input impedance will be complex and the reactive component must be included in \( A \) when \( R_B \) is less than \( R_T \) and in \( B \) when \( R_A \) is less than \( R_B \).

b. The Q of the circuit is low \((Q=(N-1)^2)\) and therefore it is not very effective at suppressing out of band emissions.

c. Suitable switches for the switched tap inductance may be difficult to find. Mine is from a WWII transmitter.

Trial and error adjustments of \( L \) and \( C \) in the Lazy Pi aided by the choice of two transmitter output impedances will get results in most cases. If it is difficult to get a good match on some bands it may be necessary to sacrifice some environmental considerations and alter aerial and/or feeder lengths to achieve manageable impedance on all bands. The 'named varieties' of the centre fed tuned feeder systems do this but unfortunately their solutions apply to a limited number of situations.

A home station all HF band aerial system ideally should be a planned design integrating all elements into the environment. To do this properly, calculations of feed point impedance for various physical arrangements should be the starting point; this is a very tedious task, hopefully a WIA member will devise a simple method for inclusion in a future paper. For those interested I recommend a paper by Brian Austin ZS6BK, in Radio Communications, August 1985.

The Department of Communication has recently received a number of inquiries as to whether, under the Radiocommunications Act 1983, a non-amateur while studying for their amateur qualification can possess an amateur transceiver for use of the receiver section only.

It is advised, for the interest of all WIA members, that as it is the persons ultimate intention to make transmissions technically they could be considered to be in possession for the purposes of operation. This is an offence under Section 23 of the Act. The Department, however, recognises the practicalities of the situation. Consequently, there are no objections to such operations providing that the transmitter section of the transceiver is disabled in a manner which is not quickly restored (ie removal of the output valves, etc).
Before Valve Amplification - Wireless Communication of an Early Era

At the turn of the century there were no amplifier valves and no transistors, but radio communication across the ocean had been established. Now we look back and see how it was done and discuss the equipment used.

In the complex electronics world of today, where thousands of transistors junctions are placed on a single silicon chip, we regard even electron tube amplification as being from a bygone era. We tend to associate the early development of radio around the electron tube as an amplifier, but we should not forget that the pioneers had established radio communications before that device had been discovered. This article examines some of the equipment used for radio (or should we say wireless) communications of that day.

Discussion will concentrate on the equipment used and associated circuit descriptions rather than the history of its development. Anyone interested in history is referred to a thesis The Historical Development of Radio Communications by J R Cox VK6NJ, published in Amateur Radio, from December 1964 to June 1965.

Over the years, some of the early terms used have given-way to other commonly used ones. Radio was called wireless, and still is to some extent. For example, it is still found in the name of our own representative body, the WIA. Electro Magnetic (EM) Waves were called hertzian waves or ether waves and the medium which supported them was known as the ether. A tuning coil was called a jigger and a capacitor was a condenser. A wireless operator was known as a Sparks and we now seem to have graduated from cycles-per-second to Hertz.

Some of the explanations given in the text are modified extracts from references used and some licence is taken in using terms, both old and new.

1. A tuned circuit, coupled to the aerial was shock excited into oscillation by rapidly discharging a capacitor, part of the tuned circuit, at repetitive intervals, usually corresponding to a repetition rate equal in frequency to a sound in the human hearing range. For each discharge, a wave train was generated, decaying in amplitude as each resonant cycle transferred energy to the aerial. The resonant frequency of the tuned circuit, partly formed by the aerial, set the frequency of transmission.

On reception, the detected output either actuated a telegraph recording device or was coupled to a telephone receiver to generate an audible buzz at a frequency related to the wave train repetition rate.

The reason for generating damped waves can be appreciated when thought is given to what is needed to generate continuous waves. To generate these, the energy lost in the tuned circuit must be continuously replaced at each cycle, these days achieved by feedback through an amplifier, the device the pioneers did not have until DeForrest developed the triode valve. Notwithstanding this, the pioneers did find ways of generating continuous waves, without valves, as we shall see later.

**Figure 1 — Oscillogram of Damped Electric Spark Waves.**

**Figure 2 — Basic Spark Transmitter.**

Returning to our damped waves, the basic circuit for generating these is the spark transmitter, see Figure 2. Capacitor C is charged from the power source until it develops a voltage sufficient to break-down the spark gap. At this point in time, capacitor C is connected, via the spark gap, across primary inductance Lp and its energy is released to the tuned circuits made up of C, Lp, Ls and the aerial reactive components. The damped wave train is commenced as energy, is continuously lost in radiation via the aerial. The wave train repetition rate is controlled by the time constant of the charge circuit, largely the capacitance of C and the impedance of the choke coils and power source.

**DAMPED WAVE TRAINS**

Signals generated for transmission of wireless telegraphy, in the early years, were in the form of Damped Wave Trains, as illustrated in Figure 1. A tuned circuit, coupled to the aerial was shock excited into oscillation by rapidly discharging a capacitor, part of the tuned circuit, at repetitive intervals, usually corresponding to a repetition rate equal in frequency to a sound in the human hearing range. For each discharge, a wave train was generated, decaying in amplitude as each resonant cycle transferred energy to the aerial. The resonant frequency of the tuned circuit, partly formed by the aerial, set the frequency of transmission.

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steel spring whose tension could be adjusted by means of an adjusting screw. Action is as follows.

When the key is pressed, a current flows through the interrupter contacts and the primary winding. The core is magnetised and the armature is attracted to it. The contacts are therefore suddenly separated and the current through the primary rapidly falls to zero. As soon as the primary current has died away, the armature is released and contacts are again made, re-organising the primary to repeat the cycle of events. The cyclic time constant sets the spark train repetition rate.

Across the contacts, a time capacitor controls the rise and fall of current to reduce arcing across the contacts and improve circuit operation.

At contact break, a high voltage is developed in the secondary coil as shown in Figure 5, and this is used to charge capacitor C for the initiation of each spark discharge and start of a wave train.

ALTERNATOR AND TRANSFORMER SYSTEM

The most universal practice for energising spark oscillating circuits of half-kilowatt spark transmitters and larger units, was to use an alternator or rotary converter with its AC output voltage stepped-up via a transformer to a value sufficient to break down the spark gap.

In the asynchronous type, as shown in Figure 8, the speed of rotation of the gap was independent of the speed of the alternator. In this system, some sparks were missed when timed at the low voltage phase of the alternator cycle, refer to Figure 9. The advantage of this system, however, was that the alternator could be run at a lower frequency than the wave train repetition frequency, the latter being controlled by the rotating gap rather than the alternator speed.

In transmitters which employed no special spark quench circuit, it was necessary to reduce coupling and detune the aerial circuit to prevent transmission of two frequencies. This was done at the expense of reduced power output coupled to the aerial.

Examples of quench gap (QG) transmitters are shown in Figures 10, 11 and 12.

WIRELESS TELEGRAPHY RECEIVERS

This segment will examine some of the devices used to detect the transmitted signals. There were no amplifying devices as they are known today, and the signal level fed to the detector was that received from the aerial system. The detector was connected via a single tuned circuit and hence selectivity to reject unwanted signals, close in frequency to that being used, was low.
THE MAGNETIC DETECTOR

Marconi is accredited with having made a great advance in detection with his invention of the magnetic detector, refer Figure 14. Two mutually coupled coils are located in the static magnetic field of a permanent magnet. One coil (A) is connected via the tuning system to the aerial and the other coil (B) is connected to the telephone receiver. The magnetic field is concentrated by an endless band of iron wire which passes through the coils and during operation, rotates continuously through them.

Operation is as follows:

When a magnetic field is removed from soft iron, there is a lag in the collapse of the field or what is generally called hysteresis. Because of this effect, the magnetic field in the wire is dragged along, past the normal field of the magnet, by the movement of the wire.

When a signal is received, a high frequency alternating magnetic field is developed from signal current in coil A. This reduces the hysteresis effect and hence increases the strength of the field from the magnet passing through coil B. A change in field strength through coil B develops a voltage at B so that each time a wave train is received, the telephone receiver is actuated, generating sound.

The maggie as this detector was called, was a decided improvement over the filings coherer and was used as standard Marconi equipment for many years. Though not more sensitive than the coherer, it was rugged, reliable and much faster in operation.

FILINGS COHERER

The earliest form of detector to give good results was the filings coherer, so named because of the discovery that in the presence of a high frequency alternating current, metallic filings tend to cling together or cohere.

The coherer is illustrated in Figure 13. The small glass tube is exhausted of air. The terminals TT are connected to silver plugs SS, which are separated by the nickel and silver filings. A DC circuit connects the coherer to a relay which controls a Morse inker or relay. The coherer is also connected via the tuning system to the aerial. With no signal input from the aerial, the filings have low conductivity, but when a signal from the aerial flows through the coherer, the filings cohere and increase conductivity so that the relay is energised.

A problem with the coherer was that after each wave train had passed through it, the device had to be de-cohered by means of a tapper to shake-up the filings to restore low conductivity. The apparatus to do this is not shown in the diagram. A further problem was that the coherer was easily upset by atmospheric static.

THE CRYSTAL DETECTOR

A further development was the mineral or crystal detector consisting of a piece of crystaline carborundum or crystal-line silicon with a metal point contact as shown in Figure 15. This device conducted current more readily in one direction than the other and was the forerunner of the modern point contact semi-conductor diode, the operation of which is now explained by solid state theory.

Every amateur radio enthusiast knows how a crystal radio receiver operates. Rectification by the crystal detector produces an RF component superimposed on a DC component. When the amplitude of the RF signal varies with modulation or the spark wave train, the DC component changes with it. A low pass filter formed by the headphone impedance and a by-pass capacitor removes the RF component leaving the demodulated signal which drives the headphones.

Another way to explain the process is to consider the RF signal as a carrier plus sideband components. If these are passed through a non-linear device, such as our detector, different components between the carrier and the sidebands are produced which are separated from the RF frequencies by the low pass filter. These demodulated components are, of course, audio frequencies related to our spark train repetition frequency or speech in the case of a radio telephony signal.

Another device used by the pioneers was the electrolytic detector. This also operated in a non-linear mode in that its resistance varied as a function of the signal current fed through it. This device will be considered further when reception of radio telephony is discussed.

WIRELESS INSTALLATIONS

This section will examine some early wireless station installations shown in Figures 17-23. A typical early ship installation is shown in Figure 17. In general, ships operated on frequencies below one megahertz in what is known today as the medium frequency (MF) band. For long distance communication frequencies as low as 30kHz (approximately 9000 metres), were used in the now low frequency (LF) band. Figure 23...
illustrates the massive aerial systems needed to operate at these long wave-lengths.

Figure 18 shows a low power portable wireless station using an induction coil as the spark transmission source. Figure 20 is an interesting photograph of a portable field station for cavalry. It has a dynamo driven by a petrol engine mounted on a saddle.

An early submarine filled with a large aerial structure is shown in Figure 23. According to the source from which this was obtained, the structure had to be collapsed when the submarine was submerged.

CONTINUOUS WAVES

Methods for generation of continuous waves were first discovered by Professor Elihu Thompson and ultimately developed for wireless telephone purposes by Professor R.A. Fessenden using a high frequency alternator coupled directly to the aerial system. Development of special alternators was carried out by a Swedish engineer E.F.W. Alexanderson.

The original alternator supplied power of about one kilowatt at a frequency of 80kHz. Around the period of World War I, alternator transmitters had been built and put into commercial operation with power as high as 200kW. This was high power by any standards.

The discovery of the *singing arc* by Duddell in 1900, opened up a new and promising field for telephonic purposes. He found that under certain circumstances, the electric arc could be set in a state of continuous high frequency oscillation, the frequency depending on the proportion of inductance and capacity inserted in a branch or short circuit of the arc, refer Figure 25. Burning in air, the frequency was limited to about 40kHz maximum and the system was further developed by Poulson who discovered that the frequency could be raised by forming the arc in hydrogen or hydrocarbon gases under high pressure. Cooling one of the arc poles with water to keep it cool was also found to be important.

The gases were used because of their high heat conducting power and to make the cooling effect still greater, the arc was formed between the poles of a strong electro-magnet. By repulsion of the electrolysed gas, the magnetic field caused rapid circulation of the gas around the electrodes. Using the Poulson system, frequencies as high as one megahertz were achieved compared to 100kHz for the alternator system.

Again referring to Figure 25, the action of the singing arc is explained by Dr J.A. Fleming, as follows.

If a condenser in-series with an inductance of low resistance is placed as a shunt across the arc, the first effect is to rob the arc of some current to charge the condenser. This action, however, does not decrease, but increases slightly the potential difference of the carbons. Hence the condenser continues to be charged.

When the charge is complete, the current through the arc is again stationary and the condenser at once begins to discharge back through the arc. This however increases the current and decreases the potential of the carbons, hence the action proceeds until the condenser is discharged.

In the circuit these are really two circuit paths, one carrying an oscillating current and
The wireless telephone transmitter used by Professor Fessenden is illustrated in Figure 26.

**Figure 26** — Transmitting Station, Fessenden’s Wireless Telegraphy.*

The carrier frequency is generated from a high frequency alternator and amplitude modulation of the continuous waves is achieved by passing the aerial current through a solid back carbon granule telephone transmitter so constructed that it could carry a very heavy current without overheating. Sound at the telephone-transmitter diaphragm varied the resistance of the granules and hence the loss resistance in the aerial circuit.

In one form, the heat generated was dissipated by constructing the carbon chamber with two deep grooves so as to obtain a large air cooling surface. In a later and more satisfactory form, called the trough transmitter, the same objective was achieved by circulating water through a water jacket surrounding the carbon chamber. This form, shown in Figure 29, could carry as much as 15 amps of RF current continuously.

**Figure 29** — Fessenden’s Trough Carbon Transmitter.*

Another form of transmitter used with considerable success was the **majorn** hydraulic transmitter. The operation of this was based on the capillary properties of jets of liquid and the device was made up of a small glass tube from which spurted a jet of acidulated water under steady pressure. The glass tube was connected to the diaphragm of the transmitter with an elastic envelope and the jet of water fell between two platinum plates. With a steady jet, there was constant resistance between the plates, but if the diaphragm was made to oscillate from a sound source, the resistance between the plates, controlled by the jet, was varied.

Other wireless telephoning systems have made use of the **singing arc**. Professor Ruhmer used a series connection of 12 arcs, each having a carbon and copper pole, the latter being kept cool by circulation of water inside. The arcs in this case were not enclosed; or under pressure. The arcs were operated at a current of four amperes, at a voltage of 440 volts and a frequency of 500 kHz. Figure 30 shows the transmitter system used. The 12 series arcs are shown as one in the diagram. Amplitude modulation is achieved by coupling the output of a carbon granule telephone transmitter into the arc circuit via a transformer in order to modulate the current through the arc.

**Figure 30** — Singing Arc Method of Transmission.*

It is difficult to understand how the low power output of a carbon transmitter or microphone could effectively modulate the high power of the arc, but it is claimed in reference four that comparatively small variations at the microphone gave very large fluctuations in the operation of the arcs. A later system used by Poulsen had 12 solid back carbon granuletransmitters with electrical outputs connected in parallel and all fed from the one common voice mouth-plate. Another modulation system for alternator-type transmitters is briefly described in reference four. Effective amplification of the modulating signal is achieved by modulating the DC field current to the alternator which in turn, controls the AC output voltage.

Until the time when valve amplification methods became available, the power output of radio telephone transmitters was limited by the current control capability of the microphone transmitting devices. A single solid back carbon granule transmitter developed by Fessenden could vary the through current about half an ampere. The multiple parallel system used by Poulsen could vary it about 10-12 amperes. Where the device was used to modulate the field of a high frequency alternator or output power from the alternator up to 10kW were achieved. Just how well the carrier was modulated by these systems is not clear from the references.

**WIRELESS TELEPHONY RECEIVERS**

Professor Fessenden is accredited with a great deal of the development of early wireless telephony systems and in his experiments, he made use of a number of different detection systems. One detector utilised the liquid or electrolytic barretter shown in Figure 31. This device consists of a small cylinder containing Conductive liquid, such as nitric acid. A metal...
diaphragm and the other is fixed. One coil is connected to the received signal source from the aerial and the other is connected to one of the outputs of the high frequency generator (HFG), set to the same frequency as the incoming signal.

Operation of the heterodyne receiver appears to be as follows:

With no modulation, the diaphragm, due to its inertia, does not follow the high frequency signal and, in any case, the signal could not be heard by the human ear. With modulation, sideband component frequencies are received and the summed magnetic field carrying attraction and repulsion between the two coils and moving the diaphragm, contains a component which the diaphragm can follow equal in frequency to the difference frequency of the sidebands and the high frequency generator. This difference component is of course our demodulated speech or telephone signal.

Other detectors used for wireless telephony were the crystal detector and the Fleming valve detector, both previously described.

Whilst commercial wireless telegraphy became well established without the amplifier valve, early wireless telephony appeared to be a necessity until the introduction of the amplifier valve allowed further development of commercial voice communication and radio broadcasting.

WINNERS OF MORSE

In recent Pat Hawker G3VA columns, attention has been drawn to the remarkable and unique value of Morse code in enabling badly handicapped people to communicate in equal terms with those not so handicapped and, indeed, then themselves. The degree to which this is truly the case is well illustrated in correspondence from Bob Smith G6TQ and B J Frost G6UT.

G6TQ describes a project in which he, RA1BC and the West Kent ARS have been involved for the past two years, and which has been described in an earlier Alacrit Computer Help for Disabled People.

This project centred on a young man, Mark Brown, 22-years-old, confined to a wheelchair, blind, profoundly deaf and, due to his deafness from birth, with a severe speech impairment. Yet Mark has achieved an ability to copy Morse.

G6TQ says: "We talk to him at 25 to 30 WPM, but he can read at virtually any speed. He is unable to write and just reads it in his head like a book. This is achieved by a wheelchair-borne micro-computer which is programmed to translate plain language typed on the keyboard into fast Morse. This he reads through two headphones by bone conductivity, as he can sense the vibrations."

As a result of Mark's new interests, he has put weight on his frail body, and has become more alert and lively. Via his keyboard he can talk to anybody.

G6UT reports similarly on successful work with the deaf. His project commenced when he developed an aid for the family of a totally deaf girl to enable them to call her from within the confines of a house and garden. This comprised a low-power receiver used in conjunction with an indication device, operated on the girl's speech. Her mother then took the ability to call her from a simple base transmitter using either simple pre-arranged codes or their pre-existing knowledge of Morse Code.

Work then continued with a two-way aid intended for a similar application or for use by two totally deaf persons and consists of identical transmitters, both operating on the same frequency with a wrist-watch-mounted indicator and push-button.

When one person wishes to call the other, a single press of the button causes a motorised vibrating device to be activated. This, a two-way communication can then continue using the indications and buttons based on either pre-arranged or Morse codes.

RESIN MOULDED TRIM POTS

The miniature VTL type resin-moulded trimming potentiometers offer an alternative to cermet film-trim-pots.

Because of the moulded construction, they offer good resistance to solder heat and flux interaction.

Resistance values range from 200 ohms to 1M ohm and pin spacing is based on the industry standard 5 mm grid.

Adapted from Electronic News, p31 — April 1986
This is a program for a station log for the Commodore 64 which many amateurs may find useful to have in the shack.

```
5 PRINT"J"
10 PRINT"A STATION LOG PROGRAM FOR THE":PRINT
15 PRINTTAB(13)"COMMODORE 64":PRINT
20 PRINT"WRITTEN BY JOSEPH ORTUSO":PRINT
30 PRINTTAB(16)"VK7NJO"
50 FORI=1TO2000:NEXTI
110 DIM$(1000)
120 C=0:I=1
130 READ$(I)
135 IF$(I)="END"THEN 160
140 C=C+1:I=I+1
150 GOTO130
160 PRINT"J"
170 INPUT"ENTRY PLEASE";E$:PRINT"J"
180 FORI=1TOC
190 IF$(I)="LIST"GOTO210
200 IFLEFT$(I,LEN$(E$))>E$ANDRIGHT$(I,LEN$(E$))>E$THEN220
210 PRINT"I":"";I$(I)
215 PRINT
220 NEXTI
9000 DATAUK2D0Z JOHN SSB 57/59 SYDNEY 090386
9001 DATAUK2VDX JOHN SSB 57/59 80MT.SYDNEY TS520S INVER.V DIPOLE 090386
9002 DATAVK2NZL JOHN SYDNEY 090186
9003 DATAF6FGY JACQUES MOBILE 10MT.SSB GMT 0701 270380
9004 DATAI1TYU ARMANDO MOBILE/MARINE 15MT.SSB. SOUTH CHINA SEA 020980
9005 DATAVK2GW 100580,GM4JLD 060580,DF6TR 080488,UK2VDX 150280,G4DM 030480
10000 DATAEND
10010 FORN=1TO40:PRINT"~";NEXTN
10020 PRINT"TOTAL:";"M""C""":";"M""AD""DD""QUIT"
10030 GETG$;IFG$=""THEN10030
10040 IFG$>"N"ANDG$<"A"ANDG$>"Q"THEN10030
10050 IFG$="A"THENLIST9000-1000
10060 IFG$="Q"THEN PRINT"Q":END
10070 IFG$="Q":END
10080 RESTORE;GOTO160
```

This station log program has excellent features for its relatively simple structure and it has been found to be more useful than most others, especially when the writer did not possess a disk drive.

**FEATURES**

In order to view a specific contact, you may enter the full call or just a few letters of it or the date. This is a very useful feature. For instance, if you require to know how many VK7s you have worked you just input VK7 and the screen will scroll with all the VK7 contacts. Or you may wish to find out how many stations you have worked.

If you want to find out how many contacts you have made in, say 1982, just input 82 and all the 1982 contacts will be displayed.

The program also has two counting routines, the first keeps count of your entries and numbers each one with the corresponding number; the second keeps adding them and prints out the total.

It may be noticed the way that data has been deliberately entered in a non-organised fashion, as an example to show that it is not necessary to follow any structure (which is usually annoying and time consuming when entering large amounts of data).

The only points to remember are that the call sign is to be entered first and the date last.

The program has been used very successfully initially with the datasette and now with a disk drive.

The program will also work with the VIC-20, as it was originally designed for this unit, but some re-formatting will be necessary.

---

BY-LAWS

Amateurs in Westmount, Canada, assisted by CRRL Counsel Bob Benson, QC, VE2VW, were successful in having the following provision included in a by-law that will regulate the size and placement of antenna structures in their municipality:

This by-law shall not apply to any antenna forming part of a federally-licensed structure.

It was not an easy victory. For two years, the amateurs lobbied their town council and worked to improve public relations. It was important to get the provision in. The by-law limits the horizontal component of antenna structures to 10 feet (3m). That would have eliminated all HF beams — and even wire antennas!

PROPHECY FROM THE PAST

A prophetic look forward from 50-years back!

My YF sat slowly turning the pages of old Amateur Radios, digging ever deeper into history. I was supposed to be writing but my mind was occupied with the Jim Linton/Roger Harrison paper on Future Trends, particularly the concluding comments that amateur radio's future lies in information systems and high speed data transfer.

There in was my mental sticking point. Somehow I just could not buy it. I yearned for the Nostradamus gift of prophecy. After 50-years of amateur radio involvement, wouldn't it be comforting to be able to predict our future trends. I thought of a few people who had the temerity to be prophetic about wireless — and had finished with egg on their faces. A few instances are:

Hertz demonstrating that 'ether waves' travel only in straight line (Marconi proved him wrong); De Forest, on record as saying that the transistor would never have a place in radio; the 'pundits' who claimed SW was useless for DX; and the endless number of 'nafs' who have been saying for 60-years that Morse would be dead in a decade if not a year (actually SW activity now is more than 12-months ago and it is not because of low solar activity).

I was brought back to reality by a tap on the arm. The YF handed me a tatty old Amateur Radio magazine, dated 1st September 1936. "There," she said pointing to page 11, "isn't that article remarkably prophetic considering the date it was written?"

Indeed it was — and here it is, full text:

HAM RADIO IN 2036 — A PROPHESY

by Ron Glassop VK2RF (now VK4BG)

Jim leant back in his shack chair, removed his hundred years —a hundred years. "You best guess, getting out to his satisfaction. A glance at his remarkably prophetic considering the date it was

"Yes, it must have been fun," replied VK2, etc, rather enviously. "But what we've never had we'll never miss. Like to see me have a QSO?"

"Go ahead, and you might explain things to me as you go along, like a good fellow."

"Oh, there's nothing much in it. Here's how it works. As we came through the door we broke an alarm which switched things on. Now, who do you want to work?"

"Cripes, isn't it as easy as that working anyone you want? Well, see if you can raise an EA."

"Yes, we can. Any country at any time of the day these times. Well, to raise an EA, all I do is to press this button labelled CO, and this one EA. You'll notice that there's a button for every country, in alphabetical order. The pressing of these buttons causes an automatic CO EA call to go out in a narrow beam straight at Spain. The box contains a wireless — and had finished with egg on their faces. A few instances are:

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Jim leant back in his shack chair, removed his cans and massaged his ears gently to restore circulations he already pleased with himself, by which you might guess the rig had been getting out to his satisfaction. A glance at his remarkably prophetic considering the date it was written.

"Yes, the caretaker chuckled, "we don't have newspapers now. We see events as they happen all over the world. But I suppose the first thing you want to see is a ham shack."

"Well, there are two million licenses in Australia now, so it's necessary."

"How do you get through the QRM?"

"There isn't any QRM now. Our automatic receivers can copy through any interference."

"You're sure?"

"Yes, that's the effect of a few generations of hams," replied VK2, etc. (we'll call him that for short). Big mouth from talking into mikes; flat ears from wearing cans; stumpy fingers from pounding brass. However, since there's been no need to do these things we're getting back to normal.

"What!" screamed Jim, "no talking into mikes, no listening, no brass pounding. How can you possibly QSO for that?"

"Holy smoke."

Jim entered, prepared to see almost everything. He would not have been surprised to see 20 large relay racks end on end, tubes four feet high, and a panel a yard square. Everything worked. "What do you — I mean the transmitter — say to him?"

"Of course, it's the same as we said to him playfully tapping him on the head with a finger."

Jim noticed that the way he said it did not have the same ring to it. Instead he could scarcely repress an annoyed. "Not a bit of it," yelled Jim, "I wouldn't swap that for anything. He would not have been surprised to see 20 large relay racks end on end, tubes four feet high, and a panel a yard square. Everything worked. "What do you — I mean the transmitter — say to him?"

"Of course, it's the same as we said to

"Yes, there's nothing to get worried about now. By pulling this tray out of the box we find out what he said. In fact, I hardly ever bother to read it. By the way, as the transmitter signed off, the QSL card did that."

"What!" howled Jim, "you didn't build it?

"As a matter of fact, I don't know what's going on now. By pulling this tray out of the box we find out what he said. In fact, I hardly ever bother to read it. By the way, as the transmitter signed off, the QSL card did that."

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Ron Glassop VK4BG, author of 2036.

"Honey," I said to the YF “let's do something that makes us feel more human. Quit work. I'm going turn on the rig — have a bit of a DX phone rag-chew with someone who can entertain me with his larynx and mind, instead of a computer. And then we'll go down to the local social club and chat eyeball with someone — anyone — about anything!"

Thumbnail Sketches

NOEL WHITTAKER ATKINSON
4WK, VK4NA, VK4BT (SK)

Noel, nicknamed Doherty by the boys, gained his licence on 29th July 1929, at the age of 19. His first call 4WK was changed to VK4NA a few months later. It is not known now if Noel preferred to have his own initials in the suffix, or if 'B' class licence on 29th July 1929, at the age of 19. His Dohert by the boys, gained his licence on 29th July 1929, at the age of 19. His

Perhaps most startling of all is a card from the late Arthur Burton VK1FE, Heard Island, stating that Noel was heard on five metres in February 1949. Signal report, 2 x 3. Arthur comments on the card that VK4BT was the only one he could copy.

On 21st July 1949, VK4BT QSOd VK6FC, to establish the first ever Queensland/West Australia 50 MHz contact.

The first Australian/Papua New Guinea contact on 50 MHz was with Russ VK9XK, on 29th November 1951 (see QSL card). Russ is still very active on HF CW DX and now domiciled in Brisbane with the call sign VK4AX.

A letter from Jack Coulter VK5JD, of Alice Springs, indicates that his contact with VK4BT was the first Alice/Brisbane QSO on five metres.

During 1950, Noel was the Australian winner of the WIA Contest. On 144 MHz there are QSLs to show that Noel contacted most Australian States, which was a remarkable feat in those days.

What is even more remarkable is that the above DX accomplishments were all made on an input power of 20 watts or less. This means that, with AM type modulation and the inherent losses at VHF, there would most likely be only a few watts circulating in Noel's aerial — a home-brewed multi-element stacked beam.

It could be said that Noel's professional life was all radio. He spent 25- years skillfully conducting his own repair sales and service business, then was employed with DCA for 17 years. For a period he served many picture theatres in areas around Brisbane.

Besides amateur radio, VK4BT enjoyed fishing — a pastime popular with most. His manner was easy-going and friendly, as was his approach to on-air QSOs, always conducted in the true spirit of co-operation. He was the kind of chap who would willingly help anyone with a radio problem and on-air QSOs were always conducted in the true spirit of co-operation.

Noel became a Silent Key on 26th October 1979, aged 70-years and the fraternity is much poorer for his passing. He was a long time member of the WIA and is survived by his YF Anne, three sons and a daughter — Noel Jnr, Joyce, Des and Dennis.

Alan Shawsmith VK4SS
Queensland Historian
35 Whynot Street, West End, Qld. 4101
The new Kenwood TS-440S is an upgraded replacement for the TS-430S. Believe it or not, the 430S has been around for just on four years and has been a best seller for Kenwood throughout that period. Even at the end of its run, the 430S was able to compete well with their opposition. I am sure that the 440S will give other amateur equipment manufacturers something to think about.

Firstly, let's look at the 440S and its design features — later we will see how and where it differs from the TS-430S.

The 440S is a compact, 12 volt operated HF transceiver, with a 100 kHz to 30 MHz general coverage. It has all mode capability for SSB, CW, AM, FSK, and FM (all standard features), and incorporates a staggering 100 channel memory system with comprehensive scanning facilities. Selectivity can be selected independently of mode if required or selected automatically with mode selection.

Frequency selection can be made via the normal tuning control or from the front panel dial up key pad. An automatic ATU which covers the 80 to 10 metre amateur bands is internally installed as a standard feature. Options include two CW and two SSB filters whilst transceiver metering now included a PEP power output indicator as well as an automatic SWR and ALC position.

Transmitter final amplifier cooling has been improved for 100 percent duty cycle for up to one hour of continuous operation. This will be of great interest to RTTY operators!

The 440S is a triple conversion system with IF frequencies of 45.05 MHz, 8.83 MHz and 455 kHz, compared to the 430S’s 48.055 and 8.83 MHz with 455 kHz being used only for the optional FM unit. AM (DSB) reception with the 430S, it has no receiver RF stage. A similar line-up as the 430S, but the final has been increased somewhat to provide 50W output. The 440S has an SP20 transverter offer, one receiver and a transmitter, and a spare connector is also thoughtfully provided.

You might say that this unit has something for everyone — but not quite. If you have an AT-250 automatic antenna tuner with your TS-430S and decide to retain this to use with your new 440S (after selling the 430 in Hamade), you may be disappointed. There does not appear to be any way to interface the two units. You could say, why bother as the 440S includes the AT-440 ATU anyhow. That’s right, except that the AT-250 covers 160 metres whereas the in-built unit does not.

**TECHNICAL DESCRIPTION**

The 440S is slightly larger than the 430S, but, even with the built-in ATU, weighs slightly less. It measures 29W x 9.6H x 31.3D cm (38 mm deeper than the 430S) and weighs six kilograms. The rear heat-sink has been increased in size and streamlined. The fan, which is thermostatically operated, is now fitted at the front of the final unit to achieve better air distribution.

The front panel and main circuit boards are hinged to allow good access to all sections of the interior.

Reference to the block diagram shows that after front end filtering, the signal goes straight to the first mixer, a pair of 2SK125S in push-pull. The second pair of FETs are used in the second mixer and the third in the final amplifier. The 440S has no receiver RF stage. A similar line-up as the 430S, but the final has been increased somewhat to provide 50W output. The 440S has an SP20 transverter offer, one receiver and a transmitter, and a spare connector is also thoughtfully provided.

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ON-AIR

In general, the TS-440S is a delight to use, however it seems that whenever a new model comes out, some of the best features of the older model get lost on the way. Let us look at them in turn.

The first thing that I noticed was the lack of a finger-hole in the tuning knob — when checking the entire tuning range for spurious signals. I concluded with a rather sore digit. Perhaps, to make up for this, the adjustable tuning knob tension is good, just rotate the ring at the rear of the knob until you have the tension you require. Personally, I would prefer a little less tension so that the knob would have more spin.

The filter switching from the front panel is a great idea, but unfortunately, as the review transceiver did not have any of the optional filters installed, selection was limited to 2.2 kHz for SSB or the wide AM position which is also selectable for Hi-Fi SSB. (I would like to try the effect of the YK-88 SSB filter in circuit).

The 440S has only one tuning speed whereas the 430S had two selectable steps. It is possible to get a faster tuning speed on the 440S by rotating the knob at high speed, but, of course, this is not a tuning rate. (The faster rate on the 430S was most handy for AM reception).

Perhaps the most intriguing feature of the 440S is the 100 memory capability — I got up to 20 and then ran out of ideas, however, the ease of selection makes the use of the memory system almost preferable to the normal tuning. If you require a channel that is not in the memory, simply punch it in on the keypad.

Labelling of the keypad is rather dull (black on gray) so good lighting is necessary in the shack.

The receiver sounded very good with typical Kenwood quality. The internal 7.5 cm speaker is good, but audio quality from the transceiver justifies a good external speaker.

The RIT now has its own digital readout. In addition, the main frequency readout also changes with the RIT. XIT (transmit offset) is also provided. Unlike the TS-930/940, which have an offset capability of 9.9 kHz, the 440S only has a 1 kHz offset.

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Antenna tuners of the AT-250 or AT-440 type are designed to present a 50 ohm load to the transmitter from a coaxial line with a maximum...
the receiver in the SSB mode against the ABC Melbourne broadcast stations which have a long term stability of better than 1 Hz. Again, no audible drift was detected. (Kenwood claim a stability of ± 10x10^-6.

Transmit Power Output — Power output was measured with full drive under CW conditions and then also checked for PEP output using the monitor-scope. PEP output was checked using both voice and tone modulation.

Band | CW O'put | PEP O'put
--- | --- | ---
1.8 | 117 | 120
3.5 | 115 | 117
7 | 110 | 112
10 | 112 | 115
14 | 112 | 115
18 | 112 | 115
21 | 111 | 113
24 | 110 | 112
28 | 109 | 110

It was noted while doing these tests that the power output meter in the 440S was in very close agreement with the above figures.

The scope pattern was very clean at all times and the PEP figures were taken under two-tone conditions with no detectable distortion. On air tests with another station indicated that inter-modulation distortion was acceptably low.

Receiver Tests — The receiver audio was first checked. The extension speaker output was terminated with the audio power meter and connected to the noise and distortion meter. With an 8 ohm load, the residual noise with the audio gain fully off was -64 dBm, an excellent figure. Maximum audio power output was 2.5 watts at 32 percent distortion. At 1.8 watts, 10 percent distortion occurred which is just 0.5 db better than the rated 1.5 watts. At 25 watts (an average listening level) distortion had dropped to 1.6 percent, a quite acceptable figure. The SSB audio response was checked by tuning across a signal from the crystal calibrator. The -5 db points were at 100 Hz and 2.9 kHz. The curve was quite smooth between these points. The response from AM receive was checked with the following results.

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>AM Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Hz</td>
<td>-10 dB</td>
</tr>
<tr>
<td>200 Hz</td>
<td>-4 dB</td>
</tr>
<tr>
<td>400 Hz</td>
<td>-1 dB</td>
</tr>
</tbody>
</table>

These means that you will get quite good quality for broadcast reception, but if you want to uncover weak signals on the short wave bands, it is not so good. It is a pity that the YK-88A is not offered as an option that could be selected with the front panel selectivity control.

S-Meter Calibration — The S-meter was checked at 14.200 MHz. S Reading | Input Signal | Signal Increase |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>1 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S2</td>
<td>1.6 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S3</td>
<td>2.5 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S4</td>
<td>4.0 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S5</td>
<td>6.3 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S6</td>
<td>8.0 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S7</td>
<td>10.6 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S8</td>
<td>12.5 uV</td>
<td>4 dB</td>
</tr>
<tr>
<td>S9</td>
<td>40.0 uV</td>
<td>6 dB</td>
</tr>
<tr>
<td>S9 +10</td>
<td>100.0 uV</td>
<td>20 dB</td>
</tr>
<tr>
<td>S9 +20</td>
<td>500.0 uV</td>
<td>10 dB</td>
</tr>
<tr>
<td>S9 +30</td>
<td>1600.0 uV</td>
<td></td>
</tr>
</tbody>
</table>

The S-meter is calibrated to S9 + 60 dB, which represents a signal of 100 mV. I hope you don’t strike too many of those on the amateur bands.

The receiver was checked on each amateur band for sensitivity at an input signal of .25 uV. Also, the signal required to give an S9 meter reading.

FREQ | S/N Ratio at 25.6 kHz | Input for S9
--- | --- | ---
1.8 MHz | 7 dB | 40 uV |
3.5 MHz | 14 dB | 40 uV |
7 MHz | 15 dB | 40 uV |
10 MHz | 11 dB | 40 uV |
14 MHz | 14 dB | 40 uV |
18 MHz | 12 dB | 40 uV |
21 MHz | 10 dB | 50 uV |
24 MHz | 7 dB | 80 uV |
28 MHz | 10 dB | 50 uV |

The receiver input was terminated with a 50 ohm load and the entire tuning range was checked for spurious signals. This is a time consuming job. A total of 27 signals were heard. Most of these were in the region of 10 to 15 dB equivalent signals with the strongest on 18.561 MHz, which reached about .5 uV. For a triple conversion receiver with coverage from 100 kHz to 30 MHz, this is very good.

Squelch sensitivity was checked in the FM mode at 29.6 MHz. A signal level of .3 uV opened the squelch with it set very finely.

The front end attenuator rated at 20 dB was checked at exactly that figure! The attenuator is very handy for checking the calibration of the S-meter and for giving reports on antenna performance such as front to back ratio readings.

FM performance was checked at 29.600 MHz. With a signal level of .7 uV and 3 kHz deviation, a signal/noise ratio of 15.15 was measured. Squelch sensitivity at the same frequency and in the FM mode was .31 uV.

AGC Performance — ASC threshold was about 6.5 uV. Signal level was increased from .5 uV to the maximum output of the generator. The increase in audio level was measured at 1.5 dB.

Notch Filter — The notch filter operates in the receiver audio section as distinct from the IF notch filter in the TS—930/940. There are some disadvantages in audio notch filters in that they do not reduce the level of the interfering signal but only the effect of it after detection. Nevertheless, the 440S filter does an excellent job. Attenuation was measured at three frequencies with the following results.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Attenuation (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 Hz</td>
<td>-35 dB</td>
</tr>
<tr>
<td>1.5 kHz</td>
<td>-35 dB</td>
</tr>
<tr>
<td>2.5 kHz</td>
<td>-30 dB</td>
</tr>
</tbody>
</table>

The actual notch is very sharp and so has very little effect on the received audio quality. This does mean that it can be a bit critical to adjust but once you get an idea of where to set the knob for a given heterodyne frequency it becomes easier.
THE INSTRUCTION MANUAL

I must say that Kenwood have improved their instruction manuals. They still have a way to go but the improvement is worthwhile. There is even a page devoted to circuit description.

Sections include: installation; giving basic details on setting up the transceiver for fixed and mobile operation.

The operation section firstly describes the function of each control and then goes into detail on frequency selection, memory and scanning setup.

Details are provided on the installation of the optional filters and on the several internal pre-set controls.

Fault finding is limited to operation faults or the check the antenna is connected type.

Kenwood do produce excellent service manuals for their equipment and, while I have not seen the 440S version, I would suggest it could be compulsory reading for the enthusiastic owner.

In general, the instructions are well written but one gem states the knobs, front panel and cabinet are likely to become solid after extended use. So watch out, you have been warned.

CONCLUSIONS

The 440S is a delightful transceiver to operate. I am sure it will be another winner for Kenwood. It is notable that all modes are included as standard, I would put the 440S near the top of a short list.

Thanks to John Hill, of Emtronics Melbourne, for the loan of our review model.

**EVALUATION AND ON-AIR TEST AT A GLANCE**

APPEARANCE

Packaging

** Double carton with foam inserts.

Size

** Not the smallest, but very acceptable.

Weight

** Again not the lightest, but certainly very good considering the ATU is in-built.

External Finish

** Excellent presentation.

Construction Quality

** Very good construction and accessibility.

**FRONT PANEL**

Location of Controls

*** Controls cover 57 functions. Layout is remarkable.

Size of Knobs

** A bit on the small size, but good considering the above remarks.

Labelling

** Very clear except for the key pad numbering.

Status Indicators

** Six function indicators, plus Morse and light mode indicators.

VFO ACTION

Tuning Knob

** Good size and adjustable tension, but no finger-hole.

Tuning Rate

** Only one tuning rate selectable. Stepping speed increases with fast rotation of knob.

Digital Readout

100 Hz readout with 10 Hz selectable. Bright and clear readout.

VFO Stability

Drift too low to detect.

**RECEIVER OPERATION**

Memory in the example

***** Breaks all records.

IF Shift

** Useful to adjust audio quality and reduce some interference.

Notch Filter

** For an audio notch, it works remarkably well.

Spurious response

** Quite a few but all very low (see test section).

S-Meter

** Constant 4 dB per S-point up to 59 (see test section).

AGC Performance

** Smooth action. Fast/Slow selectable, but not off.

**DIGITAL READOUT**

** No cross mod heard except when noise blanker selected.

** Only ± 1 kHz, but separate readout and main readout follows.

** Very adequate (see test section).

** No pre-amp, 20 dB attenuator only.

** Smooth progressive action.

** No use at all.

** Good on ignition noise, only fair on power line noise.

** Not bad for a built-in speaker.

** Matching speaker not available for test, very good on my usual station speaker.

** Low distortion and very clean.

** Good quality for local broadcast stations. Selectivity too broad for AM DX reception.

** Stereo headphones compatible. Relative level very good.

** Very consistent on all bands (see test section).

** With supplied hand microphone, very acceptable.

** Quite effective if not pushed too hard.

** ALC, calibrated power output and auto-SWR.

** Very quiet.

** Selection of full or semi break-in.

** Runs very cool with the new improved heat sink. Fan very quiet when running.

** Somewhat improved over earlier Kenwood manuals, but still more information and better illustrations needed.

** Although there are a few points of criticism, the overall concept is excellent.

** Poor; ** Satisfactory; *** Very Good; ** Excellent.

** DOC QSP**

IT IS ILLEGAL!!

All readers should note that, under the Regulations for the Radcom Act, it is illegal for amateur stations to indulge in conversation with unidentified stations or cause disruptive communications. Amateurs who indulge in such practices are putting their own licence in jeopardy.

**NEWS FROM LONDON**

CLASS B MORSE NOW PERMANENT

Last year’s experiment, allowing British Class B (VHF) and (UHF) licensees to use Morse on the air, finished on 31st March. During the year, the RSGB, on behalf of the DTI, issued over 6000 letters of temporary variation of the licence, to those wishing to participate in the experiment.

On 2nd May, the DTI announced that following the successful completion of the experiment, the concession is now a permanent feature of the B licence, and that the experimental restriction of Morse operation to the station address no longer applies.

Class B licensees can only obtain class A licenses (all bands) by passing the 12 WPM Morse test, and this feature allows learners to practice, in the bands for which they are licensed, under real operating conditions, in preparation for the test.

There are no specific restrictions for learners, but the DTI recommends that class B Morse operation should be in accordance with RSGB guidelines issued during the experimental period.

These include station identification by telephony before and after a Morse transmission; no operation in parts of a band reserved exclusively for Morse — to avoid interference with regular CW operation; using on/off keying of an audio tone in the channelled (FM) parts of a band; using any authorised keying method in the multi-mode sub-bands.

Figures released by the DTI on 2nd May show 28 450 class A, and 27 180 class B licensees currently in the United Kingdom.

Contributed from AR’s London Correspondent, Tony Smith G4FAI.

**COUNTRY UPDATE ON 10, 18 & 24 MHZ BANDS**

Following is an update of countries which authorise the use of the new HF bands.

10 MHz — Algeria; Andorra; Argentina; Australia; Bahamas; Belize; Bermuda; Botswana; Brunei; Canada; Cyprus; Colombia; Costa Rica; Croatia; Kyrgyzstan; Latvia; Lithuania; Luxembourg; Malta; Monaco; Montserrat; Netherlands; Netherlands Antilles; New Zealand; Nicaragua; Nigeria; Norway; Panama; Papua New Guinea; Peru; Portugal; San Marino; Senegal; Solomon Islands; South Africa; Spain; Sri Lanka; Sweden; Switzerland; Syria; Tonga; Trinidad; Turkey; United Kingdom; USA; Vanuatu; Western Samoa; Yugoslavia and Zambia.

18 MHz — Algeria; Andorra; Argentina; Australia; Austria; Bahamas; Bahrain; Botswana; Brunei; Cayman Island; China; Colombia; Costa Rica; Cyprus; Denmark; Djibouti; El Salvador; Faroe Islands; France; Gabon; German Democratic Republic; Federal Republic of Germany; Gibraltar; Greece; Grenada; Honduras; Hong Kong; Indonesia; Ireland; Israel; Italy; Japan; Korea; Luxembourg; Malaysia; Malta; Monaco; Netherlands; Netherlands Antilles; New Zealand; Nicaragua; Nigeria; Norway; Panama; Papua New Guinea; Peru; Portugal; San Marino; Senegal; Solomon Islands; South Africa; Spain; Sri Lanka; Sweden; Switzerland; Syria; Tonga; Trinidad; Turkey; United Kingdom; USA; Vanuatu; Western Samoa; Yugoslavia and Zambia.

24 MHz — Algeria; Andorra; Argentina; Australia; Austria; Bahrain; Botswana; Brunei; Cayman Island; China; Colombia; Costa Rica; Cyprus; Denmark; Djibouti; El Salvador; Faroe Islands; France; Gabon; German Democratic Republic; Federal Republic of Germany; Greece; Honduras; India; Ireland; Israel; Kuwait; Luxembourg; Malaysia; Malta; Monaco; Montserrat; Netherlands; Netherlands Antilles; New Zealand; Nigeria; Norway; Oman; Panama; Peru; Portugal; San Marino; Senegal; South Africa; Sri Lanka; Sweden; Switzerland; Syria; Tonga; Trinidad; Turkey; United Kingdom; USA; Vanuatu; Western Samoa; Yugoslavia and Zambia.

Contributed from AR’s London Correspondent, Tony Smith G4FAI.
The Wireless Institute of Australia held its 50th Federal Convention in Melbourne on the 25th, 26th and 27th April 1986.

The evening prior to the Convention was spent in informal discussions on many of the major issues that were on the agenda.

The Convention was opened shortly after 9am on Friday morning by the Federal President, David Wardlaw VK3ADW. David welcomed all Divisional delegates and NZART representatives, Terry Carroll ZL3QL, NZART President, and Jock White ZL2GX, NZART Contest and Awards Manager. The minutes of the 49th Federal Convention were received and adopted.

REPORTS PRESENTED

The President's Report was received and adopted. David stated that there had been a noticeable change in the Department of Communications (DOC) attitude to the amateur service, particularly with regard to deregulation.

There are ongoing discussions with DOC in regard to Japanese/Australian visitor's licenses.

The President added that it was unfortunate that the Secretary of the WIA was still not well enough to attend the Convention. Earl Russell VK3BER, had resigned from the Executive and was Acting-Secretary. All delegates wished Reg a speedy return to full health.

The IARU Report was then received and adopted. David, as the WIA IARU Liaison Officer, spoke on the Report. He foreshadowed the necessity for representation at a Region 3 Administrative Radio Conference for the Fixed and Mobile Service in 1988, where 146 and 148 MHz will come under discussion.

The VK2 Division put forward a proposal that the VK1 Division put forward a proposal that the VK2 Division proposed that consideration be given to expanding the Novice sub-band on 80 metres. Council voted against this proposal under existing circumstances, but Council agreed to a motion arising — to keep the pressure on members for contributions to AR.

Other reports were received from:

- John Ingham VK5KG, Federal Video Tape Coordinator
- Ken Hall VK5AKH, Federal Awards Manager;
- Ian Hunt VK5QX, Federal Contest Manager.

The Acting-Secretary, Earl Russell VK3BER, presented the Treasurer's Report. Ross stated that the Institute was in a sound financial position at the moment, but would need to keep abreast of cost pressures caused by inflation. One quarter of the Australian dollar on the overseas market.

Brenda Edmonds VK3KT, presented the Federal Education Co-ordinator's Report. Brenda reported that the Novice Study Guide was completed and had been forwarded to the DOC examinations section for approval.

The VKZL/Oceania Contest Manager's Report was presented by Greg Williams VK3BGW, who indicated that he was retiring from the position and the Institute would need to find a replacement. Jock White ZL2GX, Acting Secretary, had done the work with the Contest and, for his cooperation.

Bill Rice VK3ABR, the Editor of Amateur Radio magazine, presented the Publications Committee Report and requested that all divisions keep the pressure on members for contributions to AR.

The Federal Historian, Max Hull VK3ZS, presented his Report and expressed pleasure at the interest shown in the 75th Anniversary activities.

The Department of Science would not be given to expanding the Novice sub-band on 80 metres. DOC are investigating a system where mobile and portable stations of all grades of licence instead of having them printed on the computer was fully up and running.

Mr David Hunt, Manager of the Regulatory Operations Branch of DOC, addressed the Convention. 

Due to changes in the examination fee structure, the credit for a pass in a particular subject is now retained indefinitely. This applies from the date of introduction of the new examination fees; ie February 1986 exam. Negotiations are continuing with the Japanese administration to get permission for Australian amateurs to obtain visitor's licenses in Japan, similar to the arrangement whereby Japanese visitors to Australia are able to get an Australian visitor's license.

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Jack O'Shannassy VK3SP who had been Chairman of the 75th Anniversary Committee, informed Council that 22nd July will be remembered for re-election to the Federal Executive.

The President thanked Jack for his service to the Institute over many years, both as a member of the Executive and prior to coming on to the Executive when Jack gave valuable advice and assistance in the preparation for WARC 79.

The Federal Technical Advisory Committee (FTAC) Report was presented by Peter Gamble VK3YRP, Chairman of FTAC. Peter said that 1985 had been a very busy year for FTAC. Three papers had been prepared and circulated for comment. These were: Band-Planning; Packet Radio and Repeaters. Peter tabled these papers for discussion later in the Convention.

Allan Foxcroft VK3AE, presented the Federal Standards Coordinator's Report with the comment that the working group dealing with immunity for non-ionising radiation has been completed.

The CASPAR Report was presented by Gordon Bracewell VK3XX. Gordon informed the Convention that CASPAR was not a continuous commission but a reform of the Executive. In this instance, CASPAR was used to study the draft of Chapter 5 of the revised Amateur Operator's Handbook, and prepare a response.

Michael Owen VK3KI, said it was most helpful having the response from CASPAR as it was prepared by practical people and was useful as a basis for a legal response.

Ron Henderson VK1RH, presented the Federal Welsh Report. He fore-shadowed the comment that it appeared that most WICEN groups have had poor liaison with the Divisions. The WICEN calling frequency of 3,600 MHz has a problem in some areas due to interference.

Neil Penfold VK6NE, presented the Federal OSL Manager's Report. He stated that he had difficulty getting forwarding addresses for VKO cards. The Department of Science would not release information on a person's home address when they were in Antarctica.

The AMSAT Co-ordinator, Graham Railcliff VK3GAR, presented his report. He pointed out that funds are required to keep the satellite program going. Graham suggested that the WIA could lead the way by donating $25 cents per member, to the project and hopefully other societies in the Region would follow suit.

The Department has prepared a special oral examination for handicapped persons who are unable to sit a written examination for an amateur licence. A senior officer of the Department would visit the candidates home and conduct the examination on a one-to-one basis. Questions will be of the straight question and answers. Persons who want to request an oral examination should apply in the normal manner, including a medical certificate and supporting statement indicating the disability.

The Department's overall aim is for deregulation of the amateur service to provide maximum freedom for amateurs to experiment. This has been demonstrated in the DOC attitude to vary Packet Radio and Repeaters. David Hunt then offered to answer questions that any member may have regarding whether the new computer DOC is installing would allow them to extend the length of a licensing period from 12 months to five years, as a five-year licence is Institute policy. Mr Hunt said the option would be explored, but he would look at the matter again when the computer was fully up and running.

The President of NZART asked why there should be a charge for a visitor's licence in Australia when it is free in New Zealand. DOC will consider.
Whether you are a newly licensed novice or an old timer, there is no doubt that CW can be a little tiring on the arm if you are still using a hand pump. With a choice of so many alternatives, from simple CW keys to keyers and automatic computer sending, I chose the electronic paddle keyer for my primary method of generating Morse as it takes 95 percent of the physical strain off the wrist and arm, yet still leaves full control of the sending.

I had been using a tape recorder to record QSL-calls for contesting, but they can be fiddly to set up properly, so I felt I needed some solid-state memory. Although I had seen a few circuits for using memory chips, (see the excellent article in Amateur Radio, May 1986) I am not yet much of a kit builder, or home-brewer for that matter, so I had been looking at different commercially built models.

After considering all the facts gleaned on air and from numerous articles, advertisements and brochures, I sent off for the ETM-8C. My key arrived in the post 12 days later. (I love opening presents, don't you?), the delay being in my order arriving at the factory, which is quite comprehensive and, like all instructions, had been well thought out. I found it easy to remember the separate messages and to change the sense of the speed control, which is fast at switch on and decreases with clockwise rotation, although I seem to be getting used to it after about 10 hours use.

Controls on the front of the top panel — easy to get at with either hand! It is worth mentioning that the ETM-8C is a professional keyer, you will find that if you listen to the coastal stations; eg VIS, you will probably hear one in operation, as the importer began by supplying his working colleagues and has only recently entered the amateur market.

At just over $200 I think it is the best value for money that I have seen on the market.

**SPECIFICATIONS**

**Semi-conductors**
- 1 CMOS Ram (4096 bit)
- 14 CMOS ICs
- 3 Transistors
- 7 Diodes
- 1 LED

**Memories**
- 8 512 bit memory locations (about 50 characters each)
  - repeat/tune key for continuous repetition of messages and continuous key down of transmitter
  - automatic delay at the end of messages before reset with two delay times selected by a slide switch
  - level indication of memory operation
  - automatic stop and reset at operation of paddles

**Keying**
- carrier range 8-50 WPM
- built-in dot-dash memory which can be disabled by a slide switch
- adjustable dash-dot-pause ratio, default 3:1
- built-in side-tone generator
- squeeze feature for iambic operation

**Keying Output**
- relay keying maximum 250 volts or .5 amps or 25 watts
- transistor keying positive to ground, maximum 65 volts, 1 amp

**Power Requirements**
- 4 size AA batteries (built-in battery holder)
- idling current .001 mA (typ)
- relay keying: 20 mA
- transistor keying: 3mA
- additional 6 mA during memory operation

**Dimensions and Weight**
- 45.5 by 113 by 160 mm (HWD)
- 800 grams without batteries
CONTEST CALENDAR

JULY
- 1 Canada Day Contest
- 5-6 Venezuelan SSB Contest
- 12-13 IARU Radiosport
- 19-20 Colombian Radiosport Contest 1986 (Rules this issue)
- 26-27 Armadillo Run CW (See May issue)
- 27-28 Venezuelan CW Contest
- 28-29 MARAC County Hunters CW

AUGUST
- 9-10 European CW Contest
- 16-17 Remembrance Day Contest (Rules this issue)
- 16-17 New Mexico QSO Party
- 23-24 All Asian CW Contest (Rules June issue)

SEPTEMBER
- 13-14 European Phone Contest
- 20-21 Scandinavian CW Activity
- 27-28 Scandinavian SSB Activity

OCTOBER
- 4-5 VK4ZL Oceania Phone Contest
- 4-5 IRSA World Championship
- 11-12 VK4XLA and VK4XEB
- 15-17 YLRL Anniversary CW Party
- 25-26 CO WW DX Phone Contest
- 30-31 YLRL Anniversary SSB Party

NOVEMBER
- 9 Australian Ladies Amateur Radio Association Contest
- 9-10 European RTTY Contest
- 29-30 World CW Contest

VENEZUELAN CONTEST
Times: 0000 UTC Saturday to 2400 UTC Sunday.
Phone: 5-6th July CW: 26-27th July.
This is the 24th yearly contest celebrating Venezuela's Independence. It is a world-wide type contest; therefore do not confine your activity to working YVs only. Use all six HF bands, 10 through to 160 metres. There are four classes: Single, Single and All-band and Multi-operator single and Multi-transmitter.

EXCHANGE: RT(T) plus a QSO number starting with 001.

VH-contacts: Contacts between stations in different countries, two points. Between stations in the same country zero points, but permitted for multiplier credit.

MULTIPLIERS: One for each YV call area, and each country (including own) worked on each band.

FINAL SCORE: Total QSO points from all bands divided by the sum of the multiplier from each band.

AWARDS: A plaque to the highest scorer in each class, Medals to the highest scoring single operator in each continent and the Bolivian countries (Bolivia, Colombia, Ecuador, Panama, Peru). Certificates to stations in the Americas working five YVs, and 10 countries. Use a separate log sheet for each band, and a summary sheet showing the scoring, your name and address (block letters), and the usual additional data. It is declared that all award applicants include a remittance of US$2 or its equivalent in IRCs. Mailing deadline is 15th August for phone entries and 15th September for CW. Post to: Radio Club Venezolano, PO Box 2285, Caracas, 1010-A Venezuela.

REMEMBRANCE DAY CONTEST — 1986
In this issue, I have provided the rules for the 1986 Remembrance Day Contest — the Big One for the year.
This year the rules are changed very little from last year, however, I will detail the few changes.

These are:
- On VH, repeat contacts may be made on the basis of two hourly intervals.
- Minimum number of contacts for a valid log is 10.
- Certificates will be issued under the guidelines endorsed by the recent Federal Convention (see below for details).
- The VK6 area is regarded as a distinctly separate area for State scoring purposes.

These rule changes are minor and should present no difficulties to entrants. I would like to think that all entrants do make themselves familiar with the rules before entering the contest and also, give warning once more that where logs are returned on entry failures the rules are held to a strict interpretation, and even at this late stage we understand the rules, strong consideration will be given to disqualification; eg no Front Sheet or Declaration, etc.

This contest is one which carries with it a remarkable and quite marvellous tradition. I know that there are some operators who do not go on air at any other time of the year and yet they would consider taking part in this contest. However, I will detail the few changes.

This year, I will provide a listing of the names and call signs of those operators who lost their lives whilst on active service during the Second World War, and who are commemorated with their names being engraved on our Trophy. It is these names you will hear read out as part of the Opening Ceremony prior to the commencement of the Contest.

Here's a just a few facts concerning the Trophy which may be of interest to you. The trophy has been won by all Divisions at some stage of its existence, however, the VK5 Division has won it on more consecutive occasions than any other. It was during one of these winning runs that the boys up north in Darwin asked if they could see the Trophy after they had worked it in the Division. This request was immediately acceded to. So, can you guess just where the Trophy was sitting on that fateful Christmas Day in 1974, when Cyclone Tracy struck the City of Darwin? It was sitting in all its glory in the lounge room of Henry VK8HA! The precious object was returned to Adelaide, where it was handed over to Bob VK5PB, who, at the time, was operating an electro-plating business. He did a very fine job of repairing it and as gold is a better and more durable material than silver, he decided that all award applicants include a remittance of US$2 or its equivalent in IRCs. Mailing deadline is 15th August for phone entries and 15th September for CW. Post to: Radio Club Venezolano, PO Box 2285, Caracas, 1010-A Venezuela.

In such a manner that, as you operate, you wilt

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA. 5001

THEY SHALL GROW NOT AS WE ARE LEFT GROW OLD
Age shall not weary them nor the years condemn At the going down of the sun and in the morning We will remember them.
The contest is held annually during the weekend nearest the 15th August, the date on which hostilities ceased in the south-west Pacific area. The contest is preceded by a short opening ceremony, a Roll Call of the names of those amateurs who paid the Supreme Sacrifice, is read.

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those amateurs who made the Supreme Sacrifice and so perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and in addition, the winning Division will receive a suitable certificate. The winning Division also holds the trophy for the next 12 months, after it is presented at the Annual Convention.

Objectives

Amateurs in each VK call area will endeavour to contact other amateurs - in other VK call areas, P2 and ZL on bands 1.8 to 30 MHz, except the 10, 18 and 24 MHz bands. * in any VK call area, including their own, P2 and ZL on bands above 52 MHz, and as indicated in Rule 5.

Rules

1. There will be two contest categories.
   (a) High Frequency (HF) - for operation on bands below the 52 MHz band.
   (b) Very High Frequency (VHF) — for operation on bands from 52 MHz and upwards.

2. Each category is to be divided into three sections:
   (a) Transmitting Phone
   (b) Transmitting CW
   (c) Receiving.

Marks available to each section are as follows:
- (a) AM, FM, SSB, TV
- (b) CW, RTTY
- (c) Receive (a) or (b)

3. A Roll Call of the names of those amateurs (VK call sign) may enter the contest, whether their stations are fixed, portable, or mobile. Members and non-members of the Wireless Institute of Australia are eligible for membership.

4. Cross Mode Operation is permitted. Cross Band Operation is not permitted excepting via a satellite repeater.

5. Successful Contacts

(a) All contacts score one point.
(b) On all bands a station in another call area may be contacted once on each band using each mode. That is: you may work the same station on each band on Phone, CW, RTTY and TV.

(c) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed at intervals of not less than two hours since the previous same band/mode contact. No operator may be contacted repeatedly via satellite not more than once by each mode on each orbit.

(d) Logs for all entries must show a minimum of at least 10 valid contacts.

6. Multi-Operator Stations Are Not Permitted (except as in Rule 7), although log keepers are always on hand. One log must be made to keep a contact under his/her own call sign. Should two or more operators wish to operate any particular station each will be considered as a contact operator and a log will be submitted on the individual call sign which applies to that operator.

7. Club Stations may be operated by more than one operator, but only one operator may operate any WIA frequency at any one time immediately prior to the commencement time of the contest. As part of this opening ceremony, a Roll Call of the names of those amateurs who paid the Supreme Sacrifice, is read.

8. Ciphers — for a contact to be valid, serial numbers must be exchanged between stations making contact. A vertical line in each log must comprise three figures commencing 001 for the first contact and incremented by one for each successive contact. Should the serial number 999 be reached, the serial number will revert again to 001.

9. Terrestrial Repeaters — contacts via terrestrial repeaters are not permitted for scoring purposes. Cross Mode Operation is permitted. Cross Band Operation is not permitted excepting via a satellite repeater and if successful on another frequency will count for scoring purposes. The practice of operating on repeater frequencies in simplex mode is not permitted.

10. Portable Operation — Log scores of operators located outside their allocated call district will be credited to that call area in which the operation takes place.

11. Logs must be submitted on the individual call sign which applies to that operator and if successful on another frequency will count for scoring purposes. The practice of operating on repeater frequencies in simplex mode is not permitted.

12. Disqualification — see the general disqualification rules as printed in detail in the August 1985 issue of Australian Radio.

13. Each log must be submitted in accordance with the rules and spirit of the contest.

Signed: J Brown

Date: 20.8.86

A Front Sheet must also be included showing the following information in this order:
- Name
- Address
- Call Sign
- VK area
- Classification
- Riga Tally
- Score
- Page Tally
- Declaration

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.

Signed: J Brown

Date: 20.8.86

Awards for SWLs

Certificates will be awarded to the highest scorer in each call area. Further certificates may be issued at the discretion of the FCM.

Dope Sheets

Where stations make a reasonable number of contacts it is most helpful that they use some form of checking system to ensure that they do not have invalid duplicate contacts. A form of sheet which provides a convenient method of making such checks for each band was described in Amateur Radio, December 1984, page 54. I would suggest that you should use such sheets. Whilst it is not mandatory that you do so, it would be of assistance to the contest manager if you forward a copy of same, together with your log.

**EXAMPLE TRANSMITTING LOG**

**Remembrance Day Contest 1986**

**Call Sign**: VK1XXX

**Section**: (a) Transmitting Phone

**DATE** 0800 UTC 16th August to 0759 UTQ 17th August 1986.

**TIME** 0800 14 SSB VKQ00 001 002 1
          0802 1    VK9RL  002  001  2
          0805 1    VK9GB  003  001  3
          0807 "    ZLAQG  004  003  4
          0809 "    VK4XQ  003  001  5

Total Score: 1498 points
Page Tally 1 - 1 sheets 1498 points
Score Page 1 of 10

**EXAMPLE FRONT SHEET**

**Remembrance Day Contest 1986**

**Call Sign**: VK1XXX

**Section**: (a) Transmitting Phone

**Address**: PO Box 123, Farm Orchard, ACT, 2611

**Total Score**: 1498 points

**Page Tally**: 1 - 1 sheets 1498 points

**Score**: Page 1 of 10

**EXAMPLE RECEIVING LOG**

**Remembrance Day Contest 1986**

**NAME/SWL NO**: L9071

**Section**: (c) Receiving Phone

**DATE** 0800 UTC 16th August to 0759 UTQ 17th August 1986.

**TIME** 0805 1 I VK5ANW VK1XXX 011 003 1
          0807 "    ZLAQG  004  003  4
          0809 "    VK4XQ  003  001  5

Total Score: 1498 points

**Page Tally**: 1 - 1 sheets 1498 points

**Score**: Page 1 of 10

Following the Federal Convention, which was held in Melbourne during April, I was honoured to be awarded a 12 year service award by our local manager, with Jock White ZL2GX, who had attended the Convention and then travelled to Adelaide to visit some friends in the Adelaide locality. Jock has been active in Amateur Radio for many years and it was a most convenient visit allowing us to sound off to each other regarding all the grizzles we both have regarding the running of contests. Some of the problems submitted by entrants, lack of enthusiasm in some directions, changing of rules, lack of understanding by others as to contest work and administration and all the other many little items which give one a headache, the method of making such checks for each band was described in Amateur Radio, December 1984, page 54. I would suggest that you should use such sheets. Whilst it is not mandatory that you do so, it would be of assistance to the contest manager if you forward a copy of same, together with your log.
write this — VK5OX). During the course of our discussions we both kept in mind the good of amateur radio as a whole the aim of providing benefit to our members on both sides of the Tasman.

At this end that we both agreed that it would be most desirable if the Field Day Contests for both countries were made to coincide, as well as having the Remembrance Day Contest and the NZART Memorial Contests held on the same weekend. Our New Zealand friends run their Memorial Contest for the same reason that we have our Remembrance Day Contest, and it would make it much more enjoyable for the two. The rules for each contest are totally different, however ZL2GX and myself have seen that it is quite feasible, with both contests coinciding, for any operator, VK or ZL, to actually operate in both contests if he/she should so desire. The same applies to the respective Field Day Contests as well. At this stage, we could not do anything about these contests for this year, so this is just prior notice for next year.

I will provide further details regarding this approach in future issues.

ANNUAL REPORT

My Annual Report to the 1986 Federal Convention was comprised of the following items:


FCM’s Requests — (Pages 1-2). I intend, over the next few months, to provide you with more information regarding these items, however, I provide, with this issue, the details of the Guidelines for Certificate Issue, Remembrance Day Contest. These were accepted and approved by the Federal Convention as forming a part of the rules for the contest. I am sure that you will appreciate the reasoning behind this altered approach when you have considered the content of this issue carefully.

It may interest you to know that under the old rules in excess of 96 certificates were issued for the 1985 Contest. Some of these were to stations who had only really made a relatively few number of contacts.

You may also have been wondering about the results of the HF Contest Championship for 1985. I hope that I can soon provide these and I am merely awaiting the results of the VK/ZL Contest for 1986 to become available, as these notes are being written in May.

GUIDELINE FOR CERTIFICATE ISSUE, REMEMBRANCE DAY CONTEST

Certificates will be issued on the following basis:

1. Top scorer in each section (see also 4 below).

2. Top Novice Class station in each section, but as per proviso 3 below. (VK/Calls compete on an equal basis when operating in HF (Novice) Band segments, therefore there is no justification for separate certificates for different type of call sign).

3. Where an entry other than the top scorer is concerned (as per 2 above), a certificate will only be issued if the entry is equal to, or greater than, the average score in the applicable section for that State/Division.

4. Where only one entry exists in any section, a certificate will be issued when the station’s score is equal to, or greater than, the average score in the applicable section for that State/Division.

5. On VHF, the top scorer only in each section will be awarded a certificate. (There is no justification for separate certificates for holders of Full, 2 or C Calls as each compete on an equal basis in VHF.)

6. The above rules apply with the understanding, as already determined policy that the Federal Contest Manager has the power of discretion in such matters and may either award additional certificates where he considers it warranted or not issue a certificate if he considers it unwarranted.

The policy presented in detail in the above guidelines falls within the prerogative of the Federal Contest Manager as per General Guidelines already laid down from the 1985 Federal Convention. Certificates for the 1985 contest were issued on the above basis.

This document serves merely to apply the rules in a more convenient manner and in no way follows, problems of issuing an excessive number of certificates will be overcome, each certificate will have more value and not be downgraded by such instances where certificates are issued to the Top Scorer in a Section/State because the entry was the only one from that State.

It is suggested that a similar approach to that shown in these guidelines could be used when considering the allocation of certificates for other contests.

JOHN MOYLE MEMORIAL FIELD DAY CONTEST — 1986 RESULTS

I am very pleased to be able to bring you the results of this contest.

It was very well patronised this year and most entrants seem to have enjoyed themselves. I am also most appreciative of the end graphs which have been forwarded to me and I am sure that they will be of interest to you.

A total of 75 logs were received with 54 of these being for stations which were operated in the field. Details are as follows:

<table>
<thead>
<tr>
<th>Section (a)</th>
<th>Phone, Single Operator</th>
</tr>
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<tbody>
<tr>
<td>VKSSJ</td>
<td>VK5QX 3535</td>
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<tr>
<td></td>
<td>VK2GJ 1691</td>
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<tr>
<td></td>
<td>VK4KJ 1365</td>
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<td></td>
<td>VK2ARZ 662</td>
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<td>VK2OD 254</td>
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<td>VK4BZ</td>
<td>VK2EL 1556</td>
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<td>VK3SP 836</td>
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<td>VK1DA 215</td>
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<td>VK2W 21995</td>
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<td>VK2ZXX</td>
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<td>VK4AOE</td>
<td>VK4AJ 1044</td>
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<tr>
<td>VK6NAE</td>
<td>VK2MB 659</td>
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<td>VK9J 527</td>
<td>VK5AGX 434</td>
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<tr>
<td>VK3KB</td>
<td>VK4AN 285</td>
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</table>

The standard of logs submitted for this contest was generally quite high and where this occurs, it always makes the job of the contest manager so much easier.

Another very good computer generated log was submitted by VK4KTIFP to the Townsville Amateur Radio Club.

Some comments from the entrants follow:

The station was located on Mount Macedon which is situated about 50 km from the City of Melbourne. Power was derived from two wind generators, one delivering 40 amp itself and the other giving 50 amp to a 300 amp-hour battery. There was only a short period in the night when there were power failures, but our natural power and recourse was the petrol driven generator. Thank you for the TWP for the Remembrance Day, we look forward to participating in the VK3CNE. Even with the remoteness of another wind generator and we plan to have an exercise big enough to make it popular and to attract another generator altogether — VK3CNE. (It appears that VK3CNE is not the only station to consider the use of an exercise beneficial to the contest.)

It was certainly an experience operating out in the open for several hours, without any reference to a QSL, and then removing the logs on a night when there was insufficient natural power. It would have been most fitting to combine the two. The rules for both countries were made to coincide, as well as having the Remembrance Day Contest and the NZART Memorial Contests held on the same weekend. Our New Zealand friends run their Memorial Contest for the same reason that we have our Remembrance Day Contest, and it would make it much more enjoyable for the two. The rules for each contest are totally different, however ZL2GX and myself have seen that it is quite feasible, with both contests coinciding, for any operator, VK or ZL, to actually operate in both contests if he/she should so desire. The same applies to the respective Field Day Contests as well. At this stage, we could not do anything about these contests for this year, so this is just prior notice for next year.

I will provide further details regarding this approach in future issues.
the shack and the solar panel on to keep them charged up at all times. Once again, thank you for the fun — VK3CGG.

I enjoyed the contest very much especially the friendliness of the other operators. Next year, I hope to enter Section (f) with Natural Power. Thanks for your effort — VK3YN.

... this is my first John Moyle Field Day Contest and I did enjoy it. I feel that the VHF/UHF multiplier is a good idea but the distances are far too short for the multiplier — VK3YSY.

Thank you for again organising the NFD. I have completed on a small scale for over 20 years, but my days are getting short, although I enjoy the day out. I think their move to March should be good overall. I intended to give you my vote for it last year, but clean forgot it. Is it possible to announce the date of the event much earlier — VK2UM. (It is listed in the WIA Calendar and sent out with Amateur Radio at the beginning of the year. Arthur — FCM)

Lead medal of the year should be awarded to the VK3 who, whilst transmitting on phone, refused to give any numbers except to stations operating on CW. The decision as to which section is to be entered should be made after the contest, and during the preparation of the log being submitted. Once again the VHF participation and scoring is catered for to an extent which is not justified in a National Emergency Test. If the VHF operators want to take part in the National Field Day, let them do so under the same scoring conditions as those who are attempting to make a genuine contribution — VK2ARZ. (You might buy some arguments on some of these comments Max — FCM).

I was going to use an old shed on a relatives property at Hazelbrook, in the Blue Mountains. Having scouted out a couple of trees to hang a dipole, I was assured of many contact! Saturday came, packed all into the car and drove up into the mountains at 4 pm ready to hoist a wire and get started around 6 pm. Horror of horrors — the shed still exists, but the trees DON'T. Nowhere to even hang a vertical... I'm sure next year there has to be a better way of making sure the sky-hook stays in place. Anyway, I very much enjoyed the contest although surprised that more stations were not active on 80 metres on Saturday evening — VK2JBM. (Thanks for your nice log Brian. Better luck next year, but it certainly makes an interesting story — FCM).

All operators at Bulls Head noted on the improved cooperation and general good fellowship between contestants during the contest. The usual crowding and frequency theft was absent and most competitors went out of their way, maybe even sacrificing some points to make the contest an enjoyable but still competitive one. Could this be the start of a new era of co-operation in contests? The ‘bad habits’ of past contests, I hope, may at least be buried. I hope you agree with me Ian, and trust you may make special mention of this fact in your post contest brief. I realise that the current propagation problems may have some bearing on this. All operators and their families who had occasion to participate in the operation at Bulls Head remarked on the valuable experience gained in either support or operation of a field communications exercise. Each one expressed an interest in participating next year, and look forward to an improved result possibly even a winning score after we include the lessons learnt this year to next years event. Unfortunately, the weekend was not without mishap. The problem associated with the broken dipole, loosening bolts on the generators and the beams rotating with wind power, was relatively easy to overcome. However, I need to point out one problem with the logs. Despite detailed preparations and instructions to the various operators, one sheet of contacts was misplaced and the loss not noticed until after the contest. (I think you know the feeling). This meant that nine serial numbers from 144 to 152 on our 80 metre log were, in fact, sent twice... Isn’t he marvellous — ‘Alphy’. These problems only highlight the necessity of this contest, I would hate to lose some vital information in the case of an emergency. All operators I have recently met expressed their gratitude to you for the honest and impartial attitude you have towards your role as umpire — looking over the northern suburbs of Adelaide.

THE WICEN STATION VK6WIC/P FIELD DAY POWER

The Natural Power Source driven by Matthew VK6NSH.

arrays just kept on working! That’s them against the car in the other photograph. They were moved around during the day. It was morning when the photograph was taken.

THE WICEN STATION VK6WIC/P FIELD DAY POWER

The Natural Power Source driven by Bob VK6KBL, who also built the device.

The VK5BPA Second Adelaide Scout ARC station on Anstey Hill, 15 km north-east of Adelaide. Two metre equipment to the left, HF to the right. The Field Day Contest can be a little slow, so it pays to go with a good view — looking over the northern suburbs of Adelaide.

VK5BPA Club Leader, Bob VK5ADR, operating on Anstey Hill, 1216 feet ASL.

The VK3YSY’s station on top of Mount Gisborne.

[RESULTS OF PRESIDENT’S CUP]

The winner of the President’s Cup for 1986 is Gil VK3CGG. The second Adelaide Scout ARC VK6WIC/P Field Day Power Station, with future plans to operate from the Mount Buffalo Chalet. A short write-up describing Gil’s activity was printed in Amateur Radio, May issue, page 30. This was only the third time that he had entered into a contest, and he is obviously very keen on the CW mode. Gil deserves the heartiest of congratulations for his efforts including the fact that he also went to the contest to take part in a national event — VK2JBM. (Thanks for your nice log Brian. Better luck next year, but it certainly makes an interesting story — FCM).

All operators at Bulls Head noted on the improved cooperation and general good fellowship between contestants during the contest. The usual crowding and frequency theft was absent and most competitors went out of their way, maybe even sacrificing some points to make the contest an enjoyable but still competitive one. Could this be the start of a new era of co-operation in contests? The ‘bad habits’ of past contests, I hope, may at least be buried. I hope you agree with me Ian, and trust you may make special mention of this fact in your post contest brief. I realise that the current propagation problems may have some bearing on this. All operators and their families who had occasion to participate in the operation at Bulls Head remarked on the valuable experience each one gained in either support or operation of a field communications exercise. Each one expressed an interest in participating next year, and look forward to an improved result possibly even a winning score after we include the lessons learnt this year to next years event. Unfortunately, the weekend was not without mishap. The problem associated with the broken dipole, loosening bolts on the generators and the beams rotating with wind power, was relatively easy to overcome. However, I need to point out one problem with the logs. Despite detailed preparations and instructions to the various operators, one sheet of contacts was misplaced and the loss not noticed until after the contest. (I think you know the feeling). This meant that nine serial numbers from 144 to 152 on our 80 metre log were, in fact, sent twice... Isn’t he marvellous — ‘Alphy’. These problems only highlight the necessity of this contest, I would hate to lose some vital information in the case of an emergency. All operators I have recently met expressed their gratitude to you for the honest and impartial attitude you have towards your role as umpire — looking over the northern suburbs of Adelaide.

THE WICEN STATION VK6WIC/P FIELD DAY POWER

The Natural Power Source driven by Matthew VK6NSH.
“DX-citing!”

TS-440S Compact high performance HF transceiver with general coverage receiver

Kenwood’s advanced digital know-how brings Amateurs world-wide “big-rig” performance in a compact package. We call it “Digital DX-citement” — that special feeling you get every time you turn the power on!

- Covers All Amateur bands
  General coverage receiver tunes from 150 kHz-30 MHz. Easily modified for HF MARS operation.
- Direct keyboard entry of frequency
  USB, LSB, CW, AM, FM, AND AFSK, Mode selection is verified in Morse Code.
- Built-in automatic antenna tuner (optional)
  Covers 80-10 meters.
- VS-1 voice synthesizer (optional)

- Superior receiver dynamic range
  Kenwood Dyna MixTM high sensitivity direct mixing system ensures true 102 dB receiver dynamic range
- 100% duty cycle transmitter
  Super efficient cooling permits continuous key-down for periods exceeding one hour. RF input power is rated at 200 W PEP on SSB, 200 W DC on CW AFSK, FM and 110 W DC AM (The heavy duty PS-50 power supply is needed for continuous duty)
- TU-8 CTCSS unit (optional)
  Subtone is memorized when TU-8 is installed

- 100 memory channels
  Frequency and mode may be stored in 10 groups of 10 channels each. Split frequencies may be stored in 10 channels to repeater operation.
- Superb interference reduction
  IF shift, tuneable notchfilter, noise blanked, all-mode squelch, RF attenuator RIT/XIT, and optional filters fight QRM in today’s crowded bands.
- MC-425 UP/DOWN mic. included
- Computer interface port
  Dual SSB IF filtering
  A built-in SSB filter is standard. When an optional SSB filter (YK-88S or YK-88SN) is installed, dual filtering is provided.
- Full or semi break-in
  CW; AMTOR compatible.

Optional accessories:
- AT-440 internal auto, antenna tuner (80m-10m)
- AT-250 external auto tuner (160m-10m)
- AT-130 compact mobile antenna tuner (160m-10m)
- IF-232C/IC-10 level translator and modem IC kit
- PS-50 heavy duty power supply
- PS-430/PS-30 DC power supply
- SP-430 external speaker
- MB-430 mobile mounting bracket
- YK-88C/88CN 500 kHz/270 Hz CW filters
- YK-88S-88SN 2.4 kHz/1 kHz SSB filters
- MC-50A/50/85 desk microphones
- MC-55 (BP) mobile microphone
- HS-4/5/6/7 headphones
- SP-40/50 mobile speakers
- MA-5/VP-1 HF 5 band mobile helical antenna and bumper mount
- TL-922A 2kw PEP linear amplifier
- SM-220 station monitor
- VS-1 voice synthesizer
- SW-100A/200A/2000 SWR/power meters
- TU-8 CTCSS tone unit
- PG-2C extra DC cable

Kenwood takes you from HF to OSCAR!

Complete service manuals are available for all Trio-Kenwood transceivers and most accessories. Specifications and prices are subject to change without notice or obligation.

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Suggested List Price
$1585 WITH AUTO ATU
Power-Full...70 Watts!

TM-2570A/2550A

Sophisticated FM transceivers

Kenwood sets the pace again! The new all-new "25-Series" brings the industry's first compact 70-watt 2-meter FM mobile transceiver. There is even an auto dialer which stores 15 telephone numbers! There are two power versions to choose from: The TM-2570A 70-watt model, the TM-2550A for 45-watts.

- First 70-watt FM mobile (TM-2570A)
- First mobile transceiver with telephone number memory and auto-dialer (up to 15 telephone numbers)
- Direct keyboard entry of frequency
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- 23 channel memory for offset, frequency and sub-tone
- Big multi-color LCD and back-lit controls for excellent visibility

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- HI/LOW Power switch (adjustable LOW power)
- Compact DIN size

DCL Introducing... Digital Channel Link

Compatible with Kenwood's DCS (Digital Code Squelch), the DCL system enables your rig to automatically QSY to an open channel. Now you can automatically switch over to a simplex channel after repeater contact! Here's how it works:

The DCL system reaches for an open channel, remembers it, returns to the original frequency and transmits control information to another DCL-equipped station that switches both radios to the open channel. Microprocessor control assures fast and reliable operation. The whole process happens in an instant!

Further, beware of dealers not listed in this advertisement who are selling Trio Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio Kenwood (Aust) Pty Ltd and have no guarantee applicable.

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AMATEUR RADIO, July 1986

ARS station VK2LE/R VK2CRT, participating for the St George Remembrance Day Contest.

Having mishandled logs in last years members of the Orange Amateur Radio Club for notes on a not so happy theme. I have recently this month, I unfortunately find I must finish these Peter VK2EMV, Alan VK20QP and Ray VK2CRT, participating for the St George ARS station VK2LE/R

extra lengths to make sure that his local newspaper had a write-up on the contest. So there were some excellent PR work on behalf of our hobby. I also know that the manager of the Chalet was most impressed with Gil's activities and thus even more avenues to publicise our hobby may be made available.

REMEMBRANCE DAY CONTEST 1985

This month, I unfortunately find I must finish these notes on a not so happy theme. I have recently been criticised by the Secretary, and apparently members, of the Orange Amateur Radio Club for having mishandled logs in last years Remembrance Day Contest.

Yes, I did make mistakes in connection with this contest whilst under some quite heavy pressure on a number of counts, however I went to some trouble, even beyond what might have been considered absolutely necessary, to correct the mistakes which I had made.

It is rather a pity that the Club Secretary, himself a previous Federal Contest Manager, did not see fit to write direct to me and to ascertain what had occurred.

Various other operators from the VK2 Division, whose logs were not listed in the original results, had written directly to me and I was able to overcome some of these problems. Each letter was accompanied by a personal letter from me apologising for the error.

At least one other operator, who will not be named, has written to the Federal Office with complaints and criticism of my actions. I provide an answer to the main complaints in both letters.

There appears to be a total of three logs still not accounted for. These are stated to be VK2DM and VK20QP,: in order, of VK2LE/R and VK2ASY as quoted in the letter from the Orange Amateur Radio Club in the May issue of AR. The other log referred to is that of VK2BNH.

The explanation is basically quite simple. The logs stated as missing for two of the entrants were for only 20 contacts.

This fact is indicated in both letters received. As such, these logs did not qualify as valid logs. If the rules are checked, Rule 5(d) for the 1985 contest stated, Acceptable logs for all entries must show a minimum of at least 25 valid contacts. The end result of the complaints as far as missing logs are concerned is that only one log is unaccounted for.

Another criticism voiced by one complainant is the fact that I had the number of VK3 operators included as a mistake. I certainly have a very careless mistake. Yes, it is easy to see mistakes after the event, I know.

The mistake was, in fact, not basically mine as I was provided with the licensing figures from elsewhere. I suppose I should have double checked them with the Central Office of the Department of Communications.

My final statement on the matter of logs unaccounted for in this instance is that such time has elapsed since the contest that I now consider the matter closed. Had I been properly approached in the first place I might have been more inclined to go to the extra lengths to try and ascertain just what had occurred in the case of the only missing log referred to.

I might add a final somewhat happier comment that, from the very Division which could perhaps have most irritated about my serious error in the contest result, namely the VK1 Division, I have received nothing but courtesy and obvious understanding of a very embarrassing situation, I thank that Division for their forebearance. The VK2 Divisional Council received a letter of apology from me also.

73 de Ian VK5QX

COLOMBIAN INDEPENDENCE CONTEST 1986

This contest will be held from 0000 UTC Saturday, 19th July to 2359 UTC Sunday, 20th July.

Categories:

a Single operator, single band, CW only. Phone only.
b Single operator, multi-band, CW only. Phone only.
c Multi-operator, single transmitter, multi-band, CW only. Phone only.
d Multi-operator, multi-transmitter, multi-band, CW only. Phone only.

(Note: There is only one single-band category ie: Single band operators using 14 MHz complete only in this band).

Bands to be used are 1.8; 3.5; 7; 14; 21 and 28 MHz.

Contest call for Phone — CO HK Contest and for CW — CQ HK Test.

Exchange:

Phone — Signal report plus three numbers starting with 001 (eg 59001).

CW — RST plus three numbers beginning with 001 (eg 599001).

(HH) will give the number 176 indicating the celebration of the 176 anniversary of Colombian Independence, (eg 59176 or 599176).)

Scoring:

With stations within own country — 1 point.

With stations within other country — 10 points.

With stations in any country — 1 point.

There appears to be a maximum of 50 QSOs, at least 10 of which are HK stations per band. Logs should include Time in UTC, Station Working, Report Sent, Report Received; multiplier; QSO Points. Separate sheets should be used for each band and each mode. Multipliers should be indicated only the first time they are worked on each band. A summary sheet should be included with the submission, indicating point computation, category of participation, name and address of operator, list of operators in the case of multioperator stations, standard contest declaration.

Submissions not including summary sheet will be counted as check logs.

Prizes:

Every station which shows a minimum of 50 QSOs, at least 10 of which are HK stations for phone entries, or five CW entries, will receive a certificate of participation. The overall winner of the contest and the winner in each category per band will receive a plaque or cup.

Conditions of entry:

Each participant must communicate with at least 10 HK stations on Phone or five HK stations on CW in order to have an entry accepted by the contest committee. Each entrant must submit proof of a total of 50 QSOs, to be eligible for a prize. Only one contact per band with the same station is valid. Cross-band or cross-mode contacts are not valid.

All correspondence and logs should be addressed to: LCRA, C/o Dirección de Concursos y Diplomas, Apartado Aereo 584, Bogota — Colombia, Sur America.

WHAT'S YOUR OPINION?

VHF enthusiasts, what are your thoughts on the Rockingham Contest which is held each December/January?

Have you any thoughts on this Contest? Participation is dwindling and entries are extremely disappointing.

The Federal Contest Manager engages in much work and thought to try to make this Contest attractive to all VHFers — are his efforts in vain?

If you have any thoughts which would help improve this Contest, please write to the Federal Contest Manager, GPO Box 1234, Adelaide, SA, 5001.

Please do not leave it until the Contest is in operation. There is not long until the rules for the 1986/87 Contest will be published — write NOW!!

SPREAD THE WORD

Have you built anything recently? Does it work? Why don't you share it with others? Maybe you think it too simple, or it doesn't look very pretty. So what? This Contest is for the Federal Contest Manager, and not for the newcomer is looking for.

CLARENCE D TUSKA — 1896-1985

The last surviving American pioneer of early organised amateur radio, Clarence D Tuska ex-1WD and 1ZT — co-founder and first secretary of the American Radio Relay League, as well as co-founder and first editor of CAR magazine — passed away on 20th June 1985. He was 88.

He is said to have been a very private man, a very simple project to you may be just what a newcomer is looking for.
AMATEUR BANDS BEACONS

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These notes are being prepared whilst touring through New South Wales and unless my next package of mail contains fresh information, will be prepared from existing information I brought with me.

FIVE METRES

I bring you the promised letter from John Allan VK5UL, who says in a note which was attached “I feel it is worthwhile to bring to the notice of newcomers to our ranks the fact that we have not always been so well informed in matters relating to VHF propagation. Also, I have extended the subject matter beyond my original intention to ensure that the significant contribution made by amateurs during World War II is not forgotten.”

“Dear Eric . . . I look forward each month to reading your contribution to AR, particularly any reference to new VHF DX records made by local enthusiasts. However, it was the weather map and associated comments seen in your column (AR, April 1985), which evoked memories of events 43 years ago.”

“My first transmissions pre-war were made on the old five metre band and I, along with others operating on that band, accepted the fact that the best DX we could expect was line-of-sight, or little more, unless a few were made aware of sunset peaks when the 10 metre band opened up worldwide. Never-the-less, we still retained the notion that VHF was limited to a few miles.”

“The thought that prompted this memo is the amazing good fortune of present day beginners, who, through your column and other sources, are able to acquire a good knowledge of the natural phenomena associated with VHF propagation. They could not be blamed for thinking that such knowledge has always been available. This of course is not so and in an endeavour to fix a time when such knowledge, based on actual experience, first became available in this country, I recount my own initial contact. Other operators may have experienced anomalous VHF propagation prior to 1942 and it would be interesting to hear from others of similar experiences.”

“Early in 1942, I completed the RDF (Radar) Course at RAAF Station, Richmond, NSW. After a short stint with a Maritime Reconnaissance Squadron, I was posted to the Air Warning System for Brisbane, I was posted to the Directorate of RDF at Air Force Headquarters, in Melbourne. Upon arrival, I was greeted by Roger Cato, the two John Moyle VK2JL, whom I had the good fortune to meet the previous year at Laverton.”

“The Directorate had been recently established under the command of Wing Commander George (Goff) Pheonix, who had been posted there prior to 1942 and I, along with others had had the good fortune to meet the previous year at Laverton. During World War II, I was posted to the Directorate with this information, it created some discussion amongst the amateur fraternity. However, it was the existence of high pressure systems. The Directorate of RDF at Air Force Headquarters, in Melbourne.”

“Anyway, it was a new experience for us and it was easy to explain the phenomenon was the fact that under long range surface conditions there was virtually no air warning.”

“For obvious reasons, the Wing Commander was very concerned and I was ordered to find an explanation for this extraordinary departure from the norm. Nobody in the Directorate could help except that one officer (another amateur) remembered seeing an article in QST magazine (Circa 1941) which described the occurrence. The chart that was involved with a new technology and had a lot to learn. What we did not realise at the time was the trouble they had had with high pressures and subsequent events over the following weeks proved this to be the source of the trouble.”

“With this, I decided to do something at that stage that we could do about it. It did resolve the fears that we had had that there may be some problems technically with regard to the equipment and/or our technique. However, it was involved with a new technology and had a lot to learn. What we did not realise at the time was the fact that we were helping to make radar history in this country. The meteorologist explained to me the mechanism of temperature inversions out. However, there was one pattern that seemed to fit consistently and that the meteorologist explained to me the mechanism of temperature inversions out. However, there was one pattern that seemed to fit consistently and that the radar during the period was affected. However, there was one pattern that seemed to fit consistently and that the radar during the period was affected.”

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John concludes, with a pertinent comment on the USA States worked, which includes Texas, Arizona, Washington State, and Alaska. John mentions that in the initial tests carried out, there was an advantage of 3 dB for six-metres over the other bands, but with slightly higher noise floor levels.

Of course, there are many variables that could influence these results. It would be desirable to see what would happen under nearly identical conditions, and in some cases, we may be able to see which conditions are best suited for a particular activity.

The ARRL magazine stated that the Irish Government had been notified of the 50 MHz operating conditions. They were the only operator in the world who had received the new permits, and every hour, new operators were granted the privilege of operating.

The bands from six metres through 70 cm were much more active during television hours. The bands usually go through six hours of operation per day, not a great deal, but we may see some other countries following suit in due course.

THE AURORA

I mentioned in a previous issue some of the effects of the very large Aurora last February, and how it had enhanced signals over the entire world. These effects were felt the world over, and many amateurs heard signals for the first time.

On 8th February, with openings from much of the US to several South American countries being reported. KH6IAA and KH6HI, worked first with the opening heard widely around midday, as he had his first contact with 50.1 MHz. A number of transcontinental contacts were made, apparently by Auroral-E, which was almost certainly responsible for the opening heard in South America. The G beacon from the Ground was a real eye-opener for the operators on the other side of the world. Some operators on both sides of the Pacific were able to contact each other through Auroral-E, which was almost certainly responsible for the opening heard in South America.

The bands from six metres through 70 cm were much more active during television hours. The bands usually go through six hours of operation per day, not a great deal, but we may see some other countries following suit in due course.

THE VK8GB EFFORT

I promised some time ago to pass on to you a list of the countries worked by six metres by some of our outstanding stations. I have pleasure this month to list the efforts of Graham Baker VK8GB (formerly of Darwin and now of Canberra), who submitted a very professionally laid out list, all in alphabetical order. It is a very neat effort and for which I thank you.

1. Tonga A35JT 12/4/82;
3. China BY5RA 28/9/84;
4. Macau CR9AJ 24/8/87;
5. Nauru C21AA 14/8/79;
6. Philippines WB5LBJ/DU6 11/10/77;
7. New Caledonia FK8EB 7/11/84;
8. Tahiti FO8BR 3/4/82;
10. Korea HL9WI 3/7/85;
11. Japan JAI6E 19/8/81;
12. Ogasawara JD1AIP 5/7/89;
13. Niue Tuni-shima Y0AAA 31/3/84;
14. Eastern Caroline Islands KC6IN 23/3/80;
15. Guam KG6DX 4/3/80;
16. Saipan KG6RO 24/8/87;
17. Johnston Island KH3AB 28/3/81;
18. Hawaii KH6FQ 28/8/80;
20. Papua New Guinea P9GB 19/8/83;
22. Australia VK3LP 10/4/84;
23. Lord Howe Island VK9XW 20/5/85;
24. Norfolk Island VK9NS 3/4/82;
25. Christmas Island VK9W 14/3/80;
26. Cocos Island VK9Y 23/11/81;
27. Willis Island VK9ZB 21/11/85;
28. Brunei V9SOX 21/11/80;
29. Hong Kong V92AB 5/3/80;
30. India VU2JIN 7/3/81;
31. USA AAGS 17/4/81;
32. Indonesia YC1BZ 22/2/80;
33. New Hebrides Y8KM 31/1/78;
34. Venezuela DL32MY 5V4/52/83;
35. St Helena ZD7BW 22/2/82;
36. Niue ZK2RS 14/1/84;
37. New Zealand ZL1MO 31/12/82;
38. Kermadec Islands ZAMBO 10/12/85;
39. Fiji 303JT 2/4/80;
40. Kenya Z54CS 29/3/82;
41. Nepal 9N1BNK 2/5/79;
42. Trinidad 9Y4LL 10/4/82.

That is a very impressive total and should give readers an idea of what has been possible through living elsewhere than Darwin! The inclusion of the dates will give you a chance to compare your logs. Graham has also included a photocopy of the back and front of every QSL card which allows for exact certification of a correct entry in the standings list.

I am still waiting for some Ross Hull Contest feedback — practically nothing has come in so far.

Closing with the thought for the month: The richest man in the world is not the one who still has the first dollar he ever earned. It is the man who still has his first friend. 73. The Voice in the Hills.
Aiming High with Communications Accessories from GFS

Way Out Front in Airband Portables the New ATC-720X
- Bulletins
- Aeroclubs
- Emergency Communications
- Rescue Ops
- Ultra Lights
- Gliders
- Airport Security
- Hang Gliders
- Air Show Comms
- Experimental

The New ATC-720X provides inexpensive airband communications for a wide range of applications. Its most important includes promoting the peace of mind which comes from knowing you have an emergency back-up transceiver with you. It is supplied complete with rubber antenna, alkaline batteries and carrying strap.

$749.50
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D-130

New Broadband Omnidirectional Antenna
25 to 1300 MHz

The new D-130 is one of the latest generation full coverage HF-VHF-UHF omnidirectional antennas. It provides continuous operation from 25 to 1300 MHz and is ideally suited to the needs of the AR-2002 or the ICOM IC-7010 scanning receivers. Also capable of transmitting on 6m, 2m, 70cm and 23cm bands.

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$14 P & P

Antenna Matcher for Continuous HF Coverage - MFJ-941D

Apart from being extremely versatile the MFJ-941D includes a 6 position coax-switch, SWR power meter, 4.1 Balun and will feed balanced line, single wire and coaxial antennas.

Price
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2 kW Dummy Load

MFJ-250 Low SWR to 400 MHz, 2 kW PEP, supplied with transformer oil.

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Expanded Range of HF-VHF-UHF Antennas

Log-P SP

Broadband Antennas

Log SP - 65 to 520 MHz
$237 + $14 P & P
Log G-190 to 520 MHz
$164 + $14 P & P

Broadband Dipoles

New T2-FD series provides continuous HF coverage
200 Watt Models
3 x 30 T2 FD 200 + 25m long 3.5 x 30 MHz
1 80 T2 FD 200 + 30m long 1.8 x 30 MHz, both priced at $180 + $14 P & P
2KW Models
3 x 50 T2 FD 2KW at 40m long 3.5 x 30 MHz
1 80 T2 FD 2KW at 50m long 1.8 x 30 MHz, both priced at $239 + $14 P & P

HF Noise Bridge with Built-in Expander

New T2-FD series provides continuous HF coverage

RF Noise Bridge with

ONOMIDIRECTIONAL

Egg Insulators Now Available at GFS

New DF-FB series provides continuous coverage

25-550 800-1300 MHz Scanner

This new unique scanner provides coverage of 26-32, 68-88, 138-176 and 180-514 MHz with a sensitivity of less than 0.5 µV. Four banks of 40 memory channels total 160 memories. High scan speed of 16 CH/SW. Auto search and store mode. Priority channel 4 hour life on battery. 24 hour clock. Scan search delay of 0 to 2 seconds.

Price
$109 + $14 P & P

For the RTTY Operator

MDK-17 (KIT)
MOD-DEMOD

A high performance RTTY CW modem kit for use on a computer or teletype. Offers high noise immunity on receive. $155 + $8 P & P (kit) or $241 + $14 P & P (assembled).

Price
$160 + $14 P & P

New D-130 is one of the latest

Mr. D-130

and antenna delay of 0.1 or 2 seconds

MICROCOMM

Log SP SCANER

Programmable Pocket Scanner

This new unique scanner provides coverage of 26-32, 68-88, 138-176 and 180-514 MHz with a sensitivity of less than 0.5 µV. Four banks of 40 memory channels total 160 memories. High scan speed of 16 CH/SW. Auto search and store mode. Priority channel 4 hour life on battery. 24 hour clock. Scan search delay of 0 to 2 seconds.

Price
$102 + $14 P & P

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OSCAR-10 APOGEEES JUNE 1986

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ACKNOWLEDGMENTS

Material has been received from Bob VK3ZBB, Graham VK5AGR, UoSAT BULLETINS and AMSAT-TELEMAIL.

EXTRACT FROM JUNE COLUMN

Readers of this column will well remember the following item in the last issue of Amateur Radio:

"The cost of the Newsletter is $15 and cheques made payable to WIA (SA Division), should be forwarded to the Wireless Institute of Australia, who are all heavily indebted.

Recently, Graham VK5AGR, received a letter from Karl Meizner DJ4ZC, on behalf of AMSAT-DL. To quote a section of that letter from Karl..."

INFORMATION NETS

AMSAT-AUSTRALIA NEWSLETTER

Following the success story for 1985 that the AMSAT-Australia Newsletter has been, Graham VK5AGR, recently forwarded a cheque to AMSAT-DL for an amount of $5000, as a donation towards the Phase-3 Program. The $5000 was made up by $3000 from AMSAT-Australia Newsletter Subscriptions, plus donations from the Software Service and proceeds from the PC-1246 Pocket Computer Sales, supplemented by a $2000 donation by the WIA (SA Division), being a significant part of the profits of the 400 VKS two-metre pre-amplifiers that were marketed by the Equipment Supplies Committee of the SA Division. A large percentage of these pre-amplifiers were purchased by listeners to, and operators of OSCAR-10. This sizable donation is a credit to the untiring efforts of Graham VK5AGR, to whom we are all heavily indebted.

Recently, Graham VK5AGR, received a letter from Karl Meizner DJ4ZC, on behalf of AMSAT-DL. To quote a section of that letter from Karl..."
To date the Newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would like something similar in their own countries. The Newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed. The project is called OSCAR-10, which has been running since 1985, whilst the team concentrated on other spacecraft systems and software, however work was carried out on this experiment after September 1985, whilst the team concentrated on other spacecraft systems and software, however most of these tasks are now well under way and some effort can again be spared to explore the CCD experiments.

We plan to recommence CCD and DSR experiments shortly and technically interested experimenters should monitor the 435 MHz UQ-11 downlink for test transmissions. Watch the UoSAT Bulletin Service for details.

VHF Beacon Power
A number of experimenters have reported periods of low output power from the UO-11 VHF downlink (as of 145.825 MHz). The VHF transmitter is designed so that it's DC power consumption, and hence its output power — le the 14 volt battery voltage. This mechanism automatically protects the spacecraft against excessive power drain at low battery voltages, whilst maintaining telemetry/data, albeit at reduced output powers.

This mechanism can be observed in operation when the spacecraft is in eclipse. The battery voltage drops down towards 12 volts from its normal 14 volt level, the VHF transmitter DC current drops from 95 mA to around 62 mA with a corresponding drop in output power from around 435 mW to 250 mW. This power change during eclipse operations accounts for the weaker signals received by stations during evening passes in winter and the recent improvement in the Northern Hemisphere as summer approaches.

Compared to traditional UO-9, the new spacecraft are designed to carry out both digital and analog experiments. Digital experiments are carried out through the Mode L and Mode S downlink signals. The digital mode is designed to allow for data transmission speeds of up to 1200 baud.

UOSAT — OSCAR-9
UoSAT-1 CCD Experiment
The CCD imager on UO-9 has been in regular use over the last year on a weekly basis, yielding some really exciting images. The CCD array used on this spacecraft is an early prototype, however, and the image quality is not up to that available from the NOAA/METEOSAT meteorological spacecraft. Therefore, we have not promoted this experiment heavily for other than those who have a technical interest in digital image reception and processing. Experiments of this type have been undertaken by digital amateurs across the line-of-sight, and some of the better images of Earth would find the NOAA/METEOSAT data more rewarding, however, the image data from UO-9 provides a technical challenge and good opportunity to achieve with some advanced techniques.

The considerable upgrade in UO-9 operations as a result of the new DIARY software running on the onboard computer (the DSR), which has automated spacecraft functions and rationalised data formats, should now be able to support more regular, real-time and interesting CCD experiments scheduled to commence shortly.

UOSAT-2 OPERATIONS
CDI Experiment
The UO-11 CCD imager and the associated Digital Store and Readout Experiment (DSR) has undergone preliminary tests during 1985, but pressure of work on other spacecraft systems and lack of available staff has placed further development of this experiment below the operations waterline! The preliminary tests showed that the CCD imager and the DSR were working, although there were some unexplained features (possibly due to ground-station display equipment). No further work was carried out on this experiment after September 1985, whilst the team concentrated on other spacecraft systems and software, however most of these tasks are now well under way and some effort can again be spared to explore the CCD experiments.

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OSCAR-10 MODE-L BULLETIN EXPERIMENTS
AMSAT ground-stations have been carrying out a series of experiments aimed at providing a reliable bulletin service via OSCAR-10 Mode L. The experiments involve transmission of FM and Amplitude
audio feedback. Transmit your call sign, and adjust the transmitter VFO to tune in the received signal.

Digital (ID-mode) Transponder

Four uplinks, 145.850/870/890/910 MHz (use fm transmitter), AX.25 level-2 protocol 1200-Baud. N0RZ signal transmitted as a Manchester-coded (biphase) signal; downlink is a PSK-coded N0RZI 1200-Baud signal on 435.910 MHz (use an SSB receiver). Bell 202 FSK modems (used in most TNCs are not suitable — use the modem circuit as printed in last month’s AMSAT column. The demodulator divides down the (32kHz) clock of the HDLC controller and gates it with the HDLC N0RZI output to create the Manchester-coded signal. (Check that the frequency at IC4 pin 2 is 1200 Hz, duty cycle should be 50 percent). Set signal at mic jack to 10 mV pp). The demodulator was developed by JATTLR, for receiving OSCAR-12 telemetry. (Check that frequency at TPI is about 3200 Hz. Adjust receiver so centre frequency of the downlink signal is about 1600 Hz, and input to A1 pin 1 is about 200 Hz.) The downlink output to receive the clock rate is 200 Hz and the crystal frequency is 1200 Hz (IC4). Set the clock rate to 200 Hz. When the clock rate is correct, the modem will work for TNCs running AX.25 or the Commodore 64 User Port using the AX.25 software from TUG mentioned in the last issue of the AMSAT Newsletter.

APOLGIO

Most readers will be aware that I unfortunately missed the deadline for the May issue. It was due to the fact that my employer requested me to travel interstate and I simply overlooked the deadline, and the Editor very unfortunately. Therefore, for the inconvenience caused I humbly apologise.

This issue is being compiled significantly earlier, as I am making a visit to Japan and I hope to get some more up-to-date information on JAS-1. Therefore, in next month’s column we should be able to report more on the launch of JAS-1.

SATellite activity for period 1ST to 28TH March 1986

1. LAUNCHES

The following launching announcements have been received:

1986-022A
Soyuz T-15
March 13
USSR

1986-023A
Progress
March 19
USSR

1986-024A
Cosmos
March 21
USSR

1986-025A
Cosmos
March 25
USSR

173
GSTAR-2
March 28
Note 1

1986-026A
SBTS-2
March 28
Note 2

Note 1: When launching announcements are received.

Note 2: These are to hand, but coverage is likely to be from 0900 UTC.

UPDATES

Occasionally, if you wish to stay abreast of daily ionospheric updates, the IPS in Sydney has a recorded information number in Sydney. If you are interested, the number is (02) 29 9664. However, I mainly utilise the summaries that appear on Radio Netherlands Media Network and RA’s Talkback, both presented by Mike Bird. Also, Standard Frequency and Time Station, WWV in Boulder, Colorado, has an up-to-date listing of frequency and time, which should be audible here, so I will possibly tune to Radio New Zealand from 0945 on MW.

BAWDY LYRICS

As I reported last month, the popular Letterbox program was axed at the end of April. The administrators at the BBC External Services were incensed at the situation, but stuck to their guns. They hinted that a similar format might be considered next year. There is seemingly a new broom sweeping Bush House. There was considerable interest in the Doomsday group of sports sessions, which caused severe disruption to HF transmission. However, I was not aware of the reason why Lily was taken off. The tune hails from the BBC wisely decided that the tune should be retained, there was another reason why Lily was taken off. The tune hails from the BBC — WWVH, does not carry the information, relying mainly on dissemination trans-Pacific weather warnings. I do believe that it used to carry this information at one time, but the distance from Colorado predates this information being included.

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Well, here we are in the middle of Winter, and ionospheric conditions are very unpredictable. During May, we had several major solar flares which caused severe disruption to HF communications. I even had difficulty in working a station only 50 km away on 80 metres, during an evening schoc. These storms have brought a lot of pressure on the world’s major sporting events. If there was any noticeable effect, it would coincidently, but the experts have so far — WWVH, does not carry the information, relying mainly on disseminating trans-Pacific weather warnings. I do believe that it used to carry this information at one time, but the distance from Colorado predates this information being included.

NEW OSCAR 10 SCHEDULES

Following is the proposed OSCAR 10 transponder schedule from 20th May to 15th August 1986.

Mode B 060 to 119
Mode C 120 to 136
Mode B 137 to 199
Off 200 to 219
Mode B 220 to 244
Off 245 to 049

NOTE: As the sun angles and eclipse times change, there may be minor changes in the transponder schedules. Listen to the beacons for the latest information.

LATE NEWS

AMSAT-UK has been given permission to broadcast G2BRS/AMSAT UK News Bulletins on OSCAR-10 any day of the week. Previously broadcast could only be broadcast on Sunday.

The above information is from an insert in AMSAT-UK OSCAR NEWS.

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Spotlight on SWLing

RETIRED

Two DX sessions have been retired. Waveguide on the BBC World Service has now been slotted from Wednesday at 0445 to Mondays at 0445 UTC. The other releases at 0750 Sundays and 1115 Tuesdays remain unaltered. The Voice of America’s (VOA) Worldwide Shortwave Spectrum is now on Tuesdays at 1345 UTC in the Magazine Show with host Gene Reich.

Another major event that the BBC World Service will be covering is certainly not in the sporting arena. This is the Royal Wedding between HRH Prince Andrew and Miss Sarah Ferguson, on Wednesday 23rd July from 1515 UTC. The voice and video coverage will be carried on the BBC World Service.

On 2115 Tuesday the Voice of America will be covering the 1115 Tuesdays remain unaltered. The Voice of America’s (VOA) Worldwide Shortwave Spectrum is now on Tuesdays at 1345 UTC in the Magazine Show with host Gene Reich.

Last month, I happened to mention that the ARDCX were going to have a DXpedition to Rainyhill, Victoria. Well, it did not eventuate as it had to be cancelled because of the apathy of DXers. It is sad that they find it difficult getting together, when there is so much to offer. Don’t get away from man-made QRM from power lines, television sets and other appliances, spending an idyllic weekend DXing in an electrically quiet location, is something an avid DXer should dream about. When one is organised, you would think that DXers would jump at the chance, but this sadly is not the case. I hope that those who organise such outings will persevere in spite of the apathy.

One last item; it was reported in the May magazine and also on the Federal Tape segments of the National Broadcaster, that GMT was no more. Such is not the case, for the BBC came to the rescue of the Royal Greenwich Observatory, giving them finance to continue the Caesium clock.

Well, that is all for this month. Until next time, the very best of listening and 73 — Robin VK7RH.
How's DX?

The words in a letter I recently received from a regular reader of the column set me thinking. It in part read: "I am not an intrepid DXer, (I get scared when I am working a pile up and make mistakes). My motto is — make mistakes but don't make misjudgements. Our hobby is just that; a hobby, not a business, everyone is human and are liable to make mistakes or errors of judgment — most amateurs are tolerant people and remember they had to make that initial QSO when they received their licence.

I admit that when I received my LAOCP, it took me hours to come to terms with the microphone and eventually call CQ. My first QSO on 'home brew' six metre equipment, luckily was with Rex VK3VL, who had talked me into sitting for the licence when we were working together in a country town, so many years ago that I wish to forget.

Unfortunately, my second encounter was not so pleasant and a 'perfectionist' gave me a rough time. In time, I probably had more QSOs (some of very long duration) with this amateur than any other. I think I learned a lot from his philosophy.

On gaining my ACOP I decided that DX from my initial QSO, was my ambition. I have mixed it with many operators from many countries and have found that tolerance and persistence has paid off. I have made many mistakes but I hope that I have learned from them. Only my fellow hobbyists can judge.

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Ladies and gentlemen, call CQ DX, get in amongst the 'dog-piles' for that rare DX station and experience will be your best teacher.

Remember, the bands need you — a licenced amateur!

QSL MANAGER

A note from Joanie KA6V, advises that she is now QSL Manager for Ed, ex KB6DAW/KH2 and later AH2BE. Ed, whilst on holidays in June, used the call W6PGI and about the middle of next month he will be residential in Korea for 12 months using an HL9 call, which is still to be allocated.

Joanie is also the Manager for Joe KC6HA, located in the West Carolines and ON4ABT who will be residential in Korea for 12 months using an HL9 call. On gaining my ACOP I decided that DX from my initial QSO, was my ambition. I have mixed it with many operators from many countries and have found that tolerance and persistence has paid off. I have made many mistakes but I hope that I have learned from them. Only my fellow hobbyists can judge.

QSLing seems to be a family affair as Joanie's husband, Jerry AA6BB, is doing the chores for Willie T3AC, who is located on West Kiribati.

This happy duo's QTH is 93787 Dorsey Lane, Junction City, Oregon, 97448 USA.

FOOXX

The operators left Clipperton on the 11th May, after making in excess of 15,000 contacts. The band breakdown was 10m-1520; 15m-3312; 20m-2953; 30m-23; 40m-3653; 80m-1074 and on 160m they had 79 entered in the log book.

Congratulations to the operators on a fine four day effort.

LONG WIRES

A note from Gil VK3CGG, with some information for the column notes that he uses an IC-720A fed into a 'home brew' tuner with a vertical, dipoles and long wire antennas at his disposal. Of the long wires, one at 75 metres and the other at 450 metres in length, Gil finds the 75 metre piece of wire superior to the other immense length of radiating wire by about 3 to 5 dB. Unfortunately, Gil must be adjacent to some main power lines as he finds that sometimes on 160 metres the QRN can reach S9+10 dB, which is not conducive to working rare DX.

Gil starts on QRP and gradually builds up power. He has never as yet called CQ DX but has quite a few countries to his credit on the CW mode considering the short time he has been operating, including a number on 10.103 MHz.

My hat is 'dipped' to you for your persistence Gil and get that 450 metre length of radiator 'purring.' It will pay dividends I feel sure.

DON'T THROW THAT CARD AWAY — YET!

Have you worked 4U1VIC? Have you received their magnificent cards? If you have, hold it in the family safe, as it may still become a new DXCC Country.

Selim OE8EEG, is still trying to gain DXCC status for 4U1VIC and it appears that if it is not granted, the status of 4U1ITU, 4U1UN and 1A0KM could be in jeopardy.

The controversy is all centred around the changing of Rule 5(b) of the ARRL DXCC Criteria and my personal opinion is that it should never have been altered or alternatively, when it was altered, 4U1ITU, 4U1UN and 1A0KM should have been deleted from the list there and then.

More headaches for Don Search, the programs administrator and associated committees.

To all concerned please look at it again and make it fair to all who meet the criteria of 'yesterday and today'.

YASME — THE HISTORY

During 1954, a British subject, Danny Weil, built a yacht and named it Yasme, using a Japanese word that means 'good luck'.

Danny had never sailed a boat before and he was not an amateur operator but he was determined to sail around the world. Despite the many difficulties encountered, he managed to sail the Yasme from England to the British Virgin Islands where he fortunately met up with the late Dick KV4AA.

Dick, in his persuasive manner for which he was renowned and also being renowned for being one of the best DX operators known to our hobby, persuaded Danny to become an amateur before continuing his trip.

Danny hence forth took another challenge, gained an Amateurs Operating Certificate of Proficiency and within hours was working DX at 20 words per minute. No mean feat.

He installed a rig aboard his home made vessel and continued his trip calling it the Yasme DXpedition.

The Yasme Foundation was formed during 1961 to help Danny meet expenses.
Danny married in 1964, and his wife accompanied him on several trips before they settled down.

Since 1965, the YASME Foundation has sponsored the DXpeditions of Iris W6QL and Lloyd W6KG, who have together amassed more than 20,000 QSLs, more than anyone else in the world. Their daughter Joy is also an amateur of DX.
It is always nice to be able to say thank you to those who have helped out in the never-ending task of trying to preserve our space on the amateur bands. Those who helped in March 1986, were: VK2BQS; 5PS; 2QI; Mr G H A Bradford; 3AMD; 3LC; 3XH; 5XU; 4JAF; 4KX; 4AV; 4BHJ; 4BMD; 4BTW; 4KHZ; 5BIF; 5GZ; 6CX; 6JO; 6RO; 6XV; 6XZ; 6YS; 7DO; 7NBF; 7RH; 8HA and 8JJ.

STATISTICS

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<td>CW Mode</td>
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<td>RTTY</td>
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<td>Other Modes</td>
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<td>Intruders who gave</td>
<td>92</td>
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<tr>
<td>Identifying call signs</td>
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JAMMING

There is still great evidence of jamming stations on 40 metres, which are more of a curse than the intruders they are jamming.

Sadly, there is some mis-guided person also causing deliberate interference on 7.085 MHz to the 40 metre DX Net which is conducted by Eric ZL2AG. Perhaps the nuisance operator is one of those un-informed people who consider that a net takes up more space on a frequency than a two-way QSO. Anyway, reports have gone to the DOC in VK2 and VK4, and we may be able to get rid of this nuisance.

SPECIAL THANKS

Special thanks go to Roy VK6KVX, for extra special help given in March 1986. As a matter of fact, the reports from VK6 were generally excellent for that month — keep up the good work!

In the column for January 1986, I mentioned that Peter Boskos, a former SWL has upgraded to VK2KPI — Peter now heads his reports with the call VK2EQQ — well done again, Peter!

SHORTED COAX AWARD

It looks as if the Shorted Coax Award (if there was such a thing) would have to be presented co-jointly to Radio Tirana (Albania) and Radio Peking (Peoples' Republic of China, and formerly Radio Peking) for their continuing presence on 40 metres, to the detriment of all authorised users of the band, and for stubborn refusal to fit in with responsible users of the radio frequency spectrum. These two share the dubious honour of being the two most persistent and irritating intruders using the broadcast mode.

TAXI CAB

There is still nothing definite on the alleged taxi-type operation on the bottom of 28 MHz in the Asian languages. I suppose everyone will start to scream when the band opens into Cycle 22, and by then, of course, it may well be too late. Have a listen and see if you can hear the activity. But do not forget to let the IW know if you do hear it!

REMEMBER!

I have asked the DOC if they would remind the USSR authorities of their promise to have the intruder UMS removed from the 15 and 20 metre bands. The USSR promised, in February 1985, to do this. We are still waiting. Letters from Urlich DJ9KR, of the DARC Bandwacht, and Joekke PA0VUV, the IARU Region 1 Monitoring System Co-ordinator, show that they are hearing a lot of the same intruders in their areas, as we are.

Fortunately for us, however, they are also hearing a lot of intruder that we cannot hear.

Col VK4AKX, points out that 10 years ago, there were many intruders on the 80 metre band which are no longer present. Many of these are still present on other bands, originating from the same countries. The significant addition in 1986, is the presence of jamming stations, which are often up to eight kilonertz wide. This does not make for easy listening.

Well, that is all for this month... please keep the Intruder Watch in mind while you are on the air, and I wish you 73 and good DX.

WANT TO KNOW MORE?

Contact your Divisional Intruder Watch Co-ordinator to find out how you too can become an Intruder Watcher!

Ian J. Truscott's ELECTRONIC WORLD

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Artwork tapes etc.
High Voltage — Ceramics, Coil formers.
Amidon Toroids. 1/8 watt resistors, Logic gates, TTL, CMOS & 74HC series.

FROM CRRL NEWS, 30th March 1986

THIRD-PARTY

Canada has third-party traffic agreements with the following countries: Antigua and Barbuda; Australia; Belgium; Botswana; Canada; Colombia; Costa Rica; Dominica; Dominican Republic; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Israel; Jamaica; Mexico; Nicaragua; Paraguay; Peru; Trinidad and Tobago; United Kingdom (contain special-event stations only); United States; Uruguay and Venezuela.

WARRINGTON, Otago, New Zealand.

FORBIDDEN TELECOMMUNICATIONS

The following countries have notified the International Telecommunications Union that they forbid telecommunications with amateurs under their jurisdiction:

Angola; Burundi; Ethiopia; Ghana; Iraq; Libya; Pakistan; Saudi Arabia; Somalia; Thailand; Turkey; Yemen and Zaire.

A side note on Turkey: there are Turkish amateurs and they are active. The Turkish Amateur Radio Society has been in correspondence with CRRL.

FROM CRRL News, 30th March 1986

Bill Martin VK2COP

FEDERAL INTRUDER WATCH CO-ORDINATOR

33 Somerville Road, Hornsby Heights, NSW 2077

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High Voltage — Ceramics, Coil formers.
Amidon Toroids. 1/8 watt resistors, Logic gates, TTL, CMOS & 74HC series.
AOCP THEORY EXAMINATION TEST PAPER

Following is a Sample AOCP Theory Examination Paper. Select the correct or most appropriate alternative answer.

1. Mutual inductance:
   a. occurs only with helically wound coils.
   b. occurs when a constant current is flowing.
   c. requires two coils in the same magnetic field.
   d. can only occur with sine wave AC.

2. All microphones operate by:
   a. using a diaphragm to move a coil.
   b. changing audio frequencies to radio frequencies.
   c. causing sound waves to vary the voltage across a crystal.
   d. converting sound wave energy to changes in electrical energy.

3. The terminal voltage of a car battery increases above 12 volts when the alternator is charging. The power output of a solid state FM transceiver drawing its primary power from this battery will:
   a. increase when the voltage increases.
   b. not change.
   c. decrease with increased engine speed.
   d. depend on the degree of voltage regulation in the transceiver low level stages.

4. Frequency dependent interference to radio reception may be reduced by:
   a. RF bypassing speaker leads.
   b. RF bypassing the AC input power supply lead.
   c. using a stub filter.
   d. radiation into the power mains.

5. Variations in HF propagation during a 27 day cycle are probably due to:
   a. phase of the moon.
   b. solar sunspot cycle.
   c. rotation of the sun.
   d. inclination of the earth.

6. A practical direct conversion receiver would usually:
   a. include a low pass filter after the mixer.
   b. have two IF stages.
   c. function without a local oscillator.
   d. have AGC on the IF stage only.

7. A FET is preferred to a bipolar transistor when
   a. increase the heat tolerance.
   b. best suited to subjects in rapid motion.
   c. can be varied greatly by about 20 percent of its marked frequency.
   d. have AGC on the IF stage only.

8. Intermodulation interference is generally caused when:
   a. a transmitter radiates spurious frequencies.
   b. non-linear stages generate unwanted frequency products.
   c. stray capacitances and inductances act as tuned circuits.
   d. harmonics of the oscillator stage fall outside the amateur bands.

9. Slow Scan television (SSTV) is:
   a. not used at HF.
   b. best suited to subjects in rapid motion.
   c. only useful for short range because of phase distortion.
   d. not suitable for reception on a domestic television receiver.

10. The purpose of 'doping' semi-conductor material is to:
    a. increase the heat tolerance.
    b. allow growth of large crystals.
    c. cancel out natural impurities.
    d. provide current carriers.

11. If a receiver frequency readout is displayed in discrete steps it is termed:
    a. analogue.
    b. digital.
    c. incremental.
    d. proportional.

12. In AC wave-form, the RMS value is:
    a. twice the peak voltage.
    b. 707 of the peak voltage.
    c. half the peak voltage.
    d. equal to the peak voltage.

13. Secondary emission from the anode of a vacuum tube is prevented by:
    a. the suppressor grid.
    b. the screen grid.
    c. internal coupling of the screen grid to the control grid.
    d. operating the tube as a Class C amplifier.

14. In a reactance modulator, FM may be achieved by applying the audio signal in a manner to vary:
    a. L only.
    b. C only.
    c. either L or C.
    d. L and C simultaneously in opposite polarities.

15. The voltage and current distribution along an antenna is in part determined by the fact that:
    a. there can be no current flow at the ends.
    b. the centre is always a current maximum.
    c. the voltage at the ends must be zero.
    d. current and voltage amplitudes are always in phase.

16. In multi-hop HF transmission:
    a. the signal may change frequency due to the earth's rotation.
    b. signal polarisation may change.
    c. attenuation occurs at each refraction but not at the reflections.
    d. frequencies above the MUF should be used.

17. A cathode ray oscilloscope pattern is controlled by:
    a. the temperature of the cathode.
    b. the setting of the trigger control.
    c. voltages applied to the deflection plates.
    d. the bias setting of the sweep generator.

18. For personal safety reasons it is important to realise that large value electrolytic capacitors used in a circuit without a 'bleeder' may:
    a. remain charged forever.
    b. not be charged again.
    c. become reverse polarised.
    d. remain charged for several days.

19. A 100 watt output transmitter contains a harmonic at a level of 60 dB below the carrier. The power of this harmonic component is:
    a. 0.1 watt.
    b. 10 milli-watts.
    c. 0.1 milli-watts.
    d. 10 micro-watts.

20. This circuit represents a:
    a. Pierce crystal oscillator.
    b. Colpitts crystal oscillator.
    c. crystal oscillator with frequency multiplier.
    d. VCO.

21. An artificial antenna should:
    a. have twice the input impedance of the normal antenna.
    b. be inside the transmitter case to prevent unwanted radiation.
    c. have the same input impedance as the transmitter output impedance.
    d. use inductive resistors.

22. Ground wave propagation at HF is:
    a. unaffected by soil conditions.
    b. greatest at 28 MHz.
    c. least with vertical polarisation.
    d. frequency dependent.

23. Severe interference to television reception on all channels is probably due to:
    a. amateur station harmonics.
    b. direct overloading from a nearby amateur station.
    c. power line leakage.
    d. the lack of a low pass filter at the receiver input.

24. Leakage current in semi-conductor devices is possible because of:
    a. thermally generated current carriers.
    b. sensitivity to light.
    c. naturally occurring impurities in the material.
    d. the density of the atoms.

25. A capacitor which is an integral part of an IC chip:
    a. is a passive component.
    b. is an active component.
    c. will have a very high working voltage.
    d. usually has an air dielectric.

26. An advantage of using a Five-Eighth wave length vertical antenna is:
    a. it is physically shorter than a half wavelength.
    b. the length provides a 50 ohm base impedance.
    c. the angle of radiation is low.
    d. it is effective as a multi-band radiator.

27. In a balanced transmission line:
    a. the SWR will always be less than 2.5:1.
    b. both wires are at equal potential to earth.
    c. the velocity factor is about 0.66.
    d. the impedance depends on the voltage applied.

28. A slow change in an oscillator frequency after switching on may be due to:
    a. a capacitor charging effect.
    b. a change in the Q of the tuned circuits.
    c. a sensitivity to temperature changes.
    d. rapid HF voltage changes.

29. The effective advantage gain of a Single Sideband Suppressed Carrier over Amplitude Modulated emission (of the same power output) is approximately:
    a. 2 dB.
    b. 3 dB.
    c. 6 dB.
    d. 9-12 dB.

30. This transistor configuration:
    a. could be used as a frequency multiplier for VHF.
    b. has a high current gain.
    c. is a common emitter.
    d. has a 180 degrees phase shift.

31. The frequency of a Quartz crystal:
    a. is permanently fixed at the time of cutting.
    b. can be varied slightly in an oscillator circuit by using a trimmer capacitor.
    c. can be varied by about 20 percent of its marked frequency.
    d. increases when mounted.

32. If VAC = 12 volts RMS, the PIV rating of the diode should be at least:

---

Page 44 • AMATEUR RADIO, July 1986
33. Spurious emissions at VHF emanating from an HF transmitter may be prevented by using:
   a. a high pass filter at the transmitter output.
   b. a resonant antenna.
   c. a linear final amplifier.
   d. ferrite beads in all active leads in the final stage.

40. Noise limiters are generally most effective against:
   a. continuous single-frequency carriers.
   b. short duration pulses.
   c. noise generated in RF stages.
   d. over-modulation and cross-modulation.

41. Band pass crystal filters:
   a. cannot be used at frequencies above 500 kHz.
   b. generally lack Q.
   c. have a low impedance at the design frequency.
   d. are used in series to reduce overall resistance.

42. External cross-modulation may occur when:
   a. a low pass filter is fitted to the receiver.
   b. a corroded metal joint acts as a rectifier of RF energy.
   c. two signals separated by only a few kHz, are received together.
   d. omni-directional microphones are used.

43. If the frequency applied to a capacitor is doubled, the reactance is:
   a. unchanged.
   b. halved.
   c. doubled.
   d. squared.

44. Noise limiters are generally most effective against:
   a. continuous single-frequency carriers.
   b. short duration pulses.
   c. noise generated in RF stages.
   d. over-modulation and cross-modulation.

45. One Farad is equal to:
   a. 10^9 nanofarads.
   b. 10^10 picofarads.
   c. 10^12 microfarads.
   d. 10^-9 megafarads.

46. In this circuit, the current flowing at point A will be:
   a. 0.018 amp.
   b. the same as at B.
   c. the same as at C.
   d. 40 milliamps.
HF EMERGENCY PROCEDURE

At the IARU Region 3 Conference, held in Auckland during November 1985, the following motion, put forward by IARU Region 1, was adopted unanimously: "The IARU Region 1 Division HF Working Group Recognising — that a common emergency procedure for all Regions on HF is desirable — proposes that the IARU Region 3 Association adopts in principle the Region 1 HF Emergency Procedure as adopted by the IARU Region 1 Conference in Cefalu (see annex). The Conference inserted in principle into the proposal for Regional Societies recognised that actual procedures were often dictated by the SES/Civil Defence organisation the amateur society was affiliated with. Indeed we in WICEN generally follow the procedure in the SES (formerly Civil Defence) little grey book and NZART AREC would support the proposal only as far as paragraph 4.

Never-the-less, for those Member Societies of Region 3 who have no experience the HF Emergency Procedure provides useful guidelines to emergency operations.

The Procedure is introduced in full below for the information of Australian amateurs, taking note of the reservations indicated above.

HF INTERNATIONAL EMERGENCY OPERATING PROCEDURE

1. General — Amateur radio is one of the Radio communication services set up by the International Telecommunication Union. In all these services emergency traffic has absolute priority over their normal operation.

Emergency traffic requires an efficient forwarding of traffic. Efficiency of communication is not self-evident in amateur radio so each operator has to think about how he should react in case of emergency and should obtain as much preparation as possible.

2. Measures in case of emergency —
   — if you hear the word "emergency", "welfare-traffic" or abbreviation QOF — stop transmitting and listen;
   — if you receive such traffic — stand by, observe it and write down all you hear;
   — do not leave the frequency before you are sure that you cannot help and somebody is helping;
   — do not transmit before you are sure that you can help;
   — follow the instructions that traffic controlling station or other stations appointed by it should transmit the word "emergency", "welfare-traffic" — "stop sending" or the abbreviation QOF to the interfering station.

3. General information for following system
   — gather information for following system
   — keep messages short — do not transmit useless information.

In case of interference by other stations, the traffic controlling station or other station appointed by it should transmit the word "emergency", "welfare-traffic" — "stop sending" or the abbreviation QOF to the interfering station.

Example:

North African, he has a suitcase with documents — (message)
This is not in our order — (message)
— do not forget to inform your national society — (message)
— please send us information about following — (message)
— give a call — (message)
— do not transmit before you are sure that you can help — (message)

4. Measures in case of emergency
   — if you hear the word "emergency", "welfare-traffic" or abbreviation QOF — stop transmitting and listen;
   — if you receive such traffic — stand by, observe it and write down all you hear;
   — do not leave the frequency before you are sure that you cannot help and somebody is helping;
   — do not transmit before you are sure that you can help;
   — follow the instructions that traffic controlling station or other stations appointed by it should transmit the word "emergency", "welfare-traffic" — "stop sending" or the abbreviation QOF to the interfering station.

5. Preamble
   number
   precedence
   station or origin
   check (number of words in text)
   place of origin
   filing time
   filing date

The number is a serial number assigned to the message.

The precedence may be: emergency — p priority
— routine
The station of origin is the call of the station which first sent the message over the air.
The place of origin is the place (city, town, village, ship) from where the originator sends his message.
The filing time and filing date is the time when the message was originated in UTC.

Example:

nr 25 to XY1ZZ 26 pool-town 2215 jan 14 = red cross lake city
please send us information about following persons stop water smith harbour street 4 stop adam brown and family water alley 16 stop eva black rain-way 29 = information bureau for river district disaster +
ii quick preamble

For traffic in VHF-FM nets where communication is easier you may use a shorter type of preamble:

Example:

N4 4 HZ1ZZ 1832 = hospital lake city
two more ambulances needed at harbour street +

6. Operation example — phone
   — do YX1AA this is XY1ZZ, I have a message, over — this is YX1AA, I am ready, over — message begins, number four x-ray yankee one zulu zulu one eight three two, address
hospital lake city
text,
two more ambulances needed at harbour street, message ends, over — repeat word after more, over — more ambulances over — received number four YX1AA out — ok XY1AA out

7. Operation example — CW
   — do YX1AA de XY1ZZ 2tc k — de YX1AA grr k
   — do NR 32 p XY1AA 24 poor town 2215 Jan 14
   — — red cross lake city —
   — please send us information —
   — information bureau for river district disaster —
   — wa please k — we please k
   — de YX1AA qsl 32 sk
   — de XY1ZZ ok sk

8. Phonetic alphabet:
   — to avoid confusion use only the following phonetic alphabet
   alphabet
   alpha
   bravo
   charlie
   delta
   echo
   foxtrot
   golf
   hotel
   india
   indiato
   juliet
   kilo
   lima
   mike
   mike
   november
   oscar
   papa
   quebec
   roma
   sierra
   tango
   uniform
   victor
   whiskey
   x-ray
   yankee
   
9. Special CW/RTTY abbreviations for emergency traffic:
   QSO? Can you communicate with me in — QOD
   I can communicate with you in
   — 0 Dutch
   — 1 English
   — 2 French
   — 3 German
   — 4 Greek
   — 5 Italian
   — 6 Japanese
   — 7 Norwegian
   — 8 Russian
   — 9 Spanish
   QTV? Shall I stand guard for you on the frequency... kHz from... to... — QAA
   — do not forget to inform your national society about your emergency — QAA
   — you won't see our message — QAA
   — do not transmit before you are sure that you can help — QAA
   — if you hear the word "emergency", "welfare-traffic" — QAA
   — if you receive such traffic — QAA
   — do not leave the frequency before you are sure that you cannot help and somebody is helping — QAA
   — do not transmit before you are sure that you can help — QAA
   — follow the instructions that traffic controlling station or other stations appointed by it should transmit the word "emergency", "welfare-traffic" — QAA
   — "stop sending" or the abbreviation QOF to the interfering station — QAA
   — please send us information about following persons — QAA
   — give a call — QAA
   — do not forget to inform your national society about your emergency — QAA
   — you won't see our message — QAA

IS THIS THE YOUNGEST?
A five-year-old kindergarten student, who took a crash course in amateur radio at the urging of her amateur parents, became the Japan's youngest licensed amateur radio operator.

Itsuka Matusuga, daughter of 43-year-old Miki and Yasuko, 42, and residents of Abahiri, in north-eastern Hokkaido, claimed the examination was not difficult.
Itsuka’s 11-year-old brother, Masatumi, is also an amateur.
For the examination it was necessary for her to learn the complicated kanji (Chinese characters).
Average Japanese students begin learning kanji in primary school.
Itsuka became interested in radio last August and began a 36-hour course offered over 12 days by the Japan Amateur Radio Operators Association on 17th March and took the final examination on 9th April.

The examination is divided into two parts, radio engineering and radio wave control law, with 10 questions and maximum marks of 100 for each part.
Conducted by David Thompson VK2BDT and abridged from THE STRAITS TIMES, 26th April 1986

Contributed by David Thompson VK2BDT and abridged from THE STRAITS TIMES, 26th April 1986
“All passage control points, this is WICEN base, the race started on time at 0700” ... and another major exercise involving WICEN groups from Brisbane, Ipswich, Dalby, and the Gold Coast, was underway on Sunday, 13th April 1986.

The occasion was the first round of the 1986 Goodyear Wrangler Off Road Championship in the Kooralbyn Valley, about 70 km south of Brisbane. For the third year, WICEN had been requested to provide a safety net and a scores-reporting system to assist in the efficient running of the rally. WICEN’s participation over the last three years follows the previous, and continuing, successful involvement with other rallies conducted by the Brisbane Sporting Car Club (BSCC). (See Rallying and WICEN, APR July 1984). The 1986 Rally came at a difficult time for WICEN, as it conflicted with the 1986 Club’s Conference, and also WICEN’s exercise of a more sedate nature, one involving horses. However, sufficient operators were found for both exercises without any difficulty.

The Rally is run over six circuits of a track in the hills between Kooralbyn and Boonah to a total race distance of 400 km, with an average of 150 competitors in several different classes of off-road vehicles. WICEN was required to man a base station plus nine control points, with each control point reporting back to base the time through the point for each car.

A little arithmetic shows that 150 x 9 x 6 equals 8100 transit times had to be handled by the network. In addition, incident reports, drivers requests for assistance and rally operational traffic all added to the load. While the worst case had to be planned for, in actual fact the attrition rate in the event saw a very significant number of cars drop out with a consequent drop in traffic over the duration of the race.

To handle this traffic, four different frequencies were used in the first two years, 10m, 6m, 2m, and 70cm. This year, the same bands were used, but with two frequencies on both two metres and 70cm. The same bands were used in the first two years, 10m, 6m, 2m, and 70cm. This year, the same bands were used, but with two frequencies on both two metres and 70cm.

Most of the time, 80 metres was a dead-loss because of electrical interference on receive, and on transmit the signal interfered with the PA system. Angus’ car was used as the base mount for several of the VHF/UHF antennas.

The WICEN operation each year has been under the overall control of Geoff Adcock VK4AG, but with his interest in cars, Geoff wanted to be out with the action, and for the first two years elected to man a control point. These points were located in suitable positions around the track, and were manned by several time-keepers and at least one WICEN operator.

With the early start, most operators elected to arrive on Saturday afternoon, set up their equipment and antennas, then camp overnight ready for the next morning.

The biggest problem at the control points was not the amount of traffic, although it was heavy in the first round, but the dust. The amount of dust created by 150 cars over six circuits of the track, even allowing for the number that dropped out, has to be seen to be believed. If the wind blew constantly from the one direction, it was possible in some cases to locate the control point upwind of the track, but with the variable winds the dust just had to be endured.

In planning the 1986 event, the organisers made a tentative decision to establish a sub-base at Boonah, to the west of the main rally circuit. They advised that they expected a lot of radio traffic from there back to the main base, and requested that a radio link be allowed for in WICEN planning. This was a problem as Boonah would be inaccessible on VHF/UHF, and 80 metres was undesirable as mentioned earlier.

Once more, it was a case of Geoff to the rescue. He had obtained a surplus commercial repeater some time previously, and with the addition of control and identification boards plus the appropriate crystals, soon had VK4RWI operating on 70 cm, as a portable WICEN repeater. Geoff’s job in the 1986 rally was to set up and monitor the operation of this repeater on a prominent hill which was in line-of-sight from Boonah, and line-of-sight from the main WICEN base.

Another of Geoff’s self imposed tasks, to the great gratitude of the BSCC was to service and make operable the commercial VHF high band radios owned and operated by them. As the Club previously had communication problems in the various areas of the circuit, Geoff volunteered...
The 70 cm antenna being erected by Paul VK4ZEM, assisted by Greg Mennis and his friend Mark McGrath. Geoff VK4AG, (partially obscured) works on the feeder. Geoff was kept very busy on his hill, and the comment was made that he seemed to be operating on one frequency or the other all day until the net closed at 1730.

No figures were available for the total number of messages handled by the net during the day, but the author's control point originated 65, both scores and incident reports. Taking that as an average, and multiplying by nine gives over 500 messages through the base station. This is a not considerable number to handle in about nine hours.

None of these messages reported any serious injuries, although there have been two accidents with injuries requiring helicopter evacuation during the three events. However, WICEN operators were not at the scene and had no part in their reports.

Because of various problems, the BSCC were unable to finalise their proposals to use Boonah and, as it turned out, this was lucky for WICEN. On Saturday afternoon Murphy struck, and VK4RWI, which had been operating perfectly, developed a fault. This was fixed, but the repeater again became faulty on the Sunday morning. With the equipment available on-site, the fault could not be located, and the repeater had to be closed down. (It was eventually diagnosed as an errant blob of solder, which was making an intermittent short on one of the circuit boards). Only one check point was in a difficult location, and really needed the repeater, but by means of a quick bit of finger work on two transceivers by Paul Mead VK4ZEM, who was assisting Geoff at the repeater site, all traffic was passed without any delay.

They even run their rally cars on three wheels!

The value of the scores messages lies in two directions. Firstly, in keeping a running location of each vehicle for safety purposes, and secondly, in having times at each control point reported quickly for scoring purposes. Normally WICEN results are accepted as transmitted, having been proved so reliable in the past. However, this was proved and also the usefulness of the information clearly shown, during the hearing of a protest that followed the 1985 event. Using a large scale map of the track, model cars, and the recorded and transmitted times, officials of the BSCC were able to show the relative location of the cars involved in the protest over the whole circuit, and were easily successful in having the protest dismissed.

And so, once more WICEN participated in a very successful exercise showing its value in message handling under portable conditions. The only incident to mar an otherwise successful day was an accident involving Graham Reuter VK4YEA, on the return journey to Brisbane, resulting in many dollars damage to his car.

The various WICEN groups involved in providing communications at this rally look forward to other similar exercises in the future.

FAMOUS PEOPLE

In the QSP page 63 December Amateur Radio, the question was asked if any readers could add to the list of well-known amateurs. VK6QU draws attention to the fact that the President of the Italian Republic, Francescse Cossiga is licensed amateur I0FCG.

VACUUM TUBE IC

Designers at Los Alamos National Laboratory have manufactured a Vacuum Tube IC, containing about 200 triodes and measuring about 40 mils on a side. Such gadgets will be the in thing within a few years, providing that nothing unforeseen happens in the political arena. The reason behind the research to make a vacuum tube IC is to find something with small dimensions, tube characteristics such as high temperature operation, radiation resistant and having a substantial forgiveness of voltage surges. The only thing not clear as yet is whether or not the small geometries associated with the micro-tubes translate to a correspondingly improved high-frequency performance.
Arcs had the problem of preventing ships from shifting the arc onto a 206 with a spacing wave on 2027 m (148 kHz) and marking wave on 2000 m (150 kHz), or the other and that required either a frequency shift (Figure 99) note but keying was a problem far to heavily coupled for anything but a broad.
MEMBERSHIP LIST as at 31st March 1986

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of Birth</th>
<th>Contact Information</th>
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<tbody>
<tr>
<td>Charlene VK1INEJ</td>
<td>21 February 1986</td>
<td>Jean Shaw</td>
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<tr>
<td>Kathleen VK2ACP</td>
<td>1 October 1980</td>
<td>Chris VK4ABN</td>
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<tr>
<td>Betty VK2AMU</td>
<td>9 March 1981</td>
<td>Sandra VK4ACJ</td>
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<tr>
<td>Jan VK3CBE</td>
<td>19 March 1988</td>
<td>Margaret VK4AOE</td>
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<td>Shell VK3EDU</td>
<td>17 March 1988</td>
<td>Jill VK4ASK</td>
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<tr>
<td>Norma VK3GJO</td>
<td>20 August 1975</td>
<td>Evelyn VK4ATK</td>
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<td>Ethel VK4EDU</td>
<td>25 August 1987</td>
<td>Jeannette VK4BK</td>
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<tr>
<td>Eunice VK5DYL</td>
<td>11 August 1987</td>
<td>Betsy VK4EDET</td>
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<tr>
<td>Joyce VK2EBX</td>
<td>25 January 1986</td>
<td>Patrycja VK4F</td>
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<td>Doreen VK2GDH</td>
<td>22 October 1985</td>
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<td>Nancy VK3GNG</td>
<td>7 November 1985</td>
<td>Wendy VK4KLY</td>
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<td>Jenny VK3JSS</td>
<td>22 November 1985</td>
<td>Carol VK4LJ</td>
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<td>Josia VK4LV</td>
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<td>Jenny VK5ANW</td>
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<td>Mel VK8GMO</td>
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<td>23 April 1987</td>
<td>Maria VK8GMT</td>
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<td>Judy VK8JYD</td>
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<td>Gillian VK8NLY</td>
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<td>11 May 1983</td>
<td>Christine VK6ZLZ</td>
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<tr>
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<td>26 November 1985</td>
<td>Laura VK6VL</td>
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<td>29 October 1976</td>
<td>Moira VK6WNY</td>
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<td>Jessie VK3KAN</td>
<td>12 February 1986</td>
<td>Jack VK6WNI</td>
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<td>Jean VK3OZ</td>
<td>17 March 1979</td>
<td>Trish VK6LYG</td>
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<td>17 March 1986</td>
<td>Daphne VK6NLY</td>
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<td>5 May 1979</td>
<td>June Greenaway</td>
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<td>Jean Trubridge</td>
<td>17 March 1979</td>
<td>Lorna VK6PDG</td>
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<tr>
<td>Kate Duncan</td>
<td>11 August 1977</td>
<td>Helene VK7TGD</td>
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<td>Readea Fowler</td>
<td>16 November 1976</td>
<td>Grace VK7NLY</td>
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<td>Muriel May</td>
<td>3 June 1976</td>
<td>Marla VK7ZSU</td>
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<td>Brownwey Lewis</td>
<td>2 October 1980</td>
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ALARA BIRTHDAY ACTIVITY DAY
July is an important month for ALARA, born 26th July 1975.

Last year we organised a Mini-Birthday-Contest, but this year we have decided to hold a special YL CW competition, to be called the VK3 Birthday CW contest (we were in June Amateur Radio). We are hoping the earlier starting time, 0400 UTC will give some of our DX friends a chance to call in. It will be nice if they can help us, albeit virtual, to celebrate our birthday, but this might be too much to hope for.

We are hoping to hear from many YLs as possible, so do try and join us, even if you can only spare a few minutes. Make a note of the date — Saturday, 26th July.

MRS FLORENCE McKENZIE CW TROPHY
Firstly, I had better set the record straight, (May Andy) — this award is given to the VK Novice YL operator with the highest CW score in the ALARA Contest. (Not the highest scoring VK YL). I guess the gremlins took over, and I omitted a most important word. My apologies! I'll do better next time.

While on the subject of the Mrs Florence McKenzie CW Trophy, I would like to stress that all novice YLs are eligible to compete for it, whether or not they completed their YL class in 1985. What's important is that you attainable score of 50 points. The actual trophy, because of its size and weight, will not be forwarded to the winner, but an attractive duplicate trophy will be sent to the successful Novice YL each year.

How about dusting off those keys and giving it a go? There are plenty of CW operators anxious to contact you. It is surely a great opportunity, also, that the points are doubled for CW contacts. If you have not actually attempted a CW contact before, the ALARA Contest is a very good starting point. You will probably find, as I did, that the majority of operators are very helpful to newcomers, and will readily help you to speed up your DXing. It is not necessary to be a real whiz-kid! After a contact or two, you may even begin to find that it is more fun than you thought.

ACTIVITIES
VK3 will be having a birthday luncheon on Sunday, 27th July 1986, at the QTH of Jessie VK3VAN. All YLs are welcome — please bring a present to Marie Jeanne OA4VL. The sun could develop around then, but if the sun could develop, we are hoping the DX friends a chance to call in. It would be nice if they can help us, albeit virtual, to celebrate our birthday, but this might be too much to hope for.

To Mona VK3BRE, whose OM Alec VK3AAP, became a silent key in April. Many who knew Kathy VK5KNK, of Coober Pedy, will be sorry to hear of the death of her OM, Lester, a few months ago.

NEW MEMBERS
We are pleased to welcome: Mona VK3KNK, Patrice VK7DF, Betty VK7FK, Sue VK7FR, and OM VK7CCW, Mary VK7DO, and VK7GJ. Helen GM4CKY, and Roger VK7IQ, and VK7LH.

Correction to April AR — Alma is VK3BAE not BAO as published.

SUBSCRIPTIONS
It may not be generally known that a reduced subscription rate is available, on application, to full pensioners and full-time students.

Until next month — 73/33, Joy VK2EBX.
AWARDS ISSUED RECENTLY

WORKED ALL STATES — VHF (144 MHz)
169 Roger Bowman VK5NY

WORKED ALL VK CALL AREAS
1456 Hiroshi Sugimori J1APG
1457 Roger Hunter GW4OGQ
1458 Serge V 5 A4VRK
1459 Vladivostok Club Station UKOLAA
1460 Pymromys Club Station UKOLAG
1461 Victor Wasilev UA9ULK
1462 German Air Force TACCA
1463 Ganndy V Treus RT5UD
1464 Nikolaj Sergienko UBSUL
1465 Yakutsk Club Station UKOGA
1466 Vladimir Chernukhin UAO6FK
1467 Oleg W Lagurashwili UA3TXD
1468 V A Andreyev UBSID
1469 Yuri Petropavlovski U6GLO
1470 Georgi Ignatov UBSHT
1471 Kemerovo Club Station UK9UMB
1472 V F Salomatin UV3FO
1473 Igor L Zelden U6BLO
1474 Alexander U6JJCJ
1475 Vladimir Trusov UA0LBM
1476 Riga Club Station UK2GDZ
1477 Jans Faizuy UV5MF
1478 Rudolf W YV3DGO

HEARD ALL VK CALL AREAS
110 Alexander Zhigachov UA6-101-62
111 Sergei Nesterov UB5-059-258
112 Nicolai Kostigin UA3-170-1106
113 A Fyodorov UA1-169-736
114 Leonid Ilich UB5-080-133
115 Yuri Bodrov UB5-070-546

WKS JUBILEE 150 AWARD

Awards

10 km x 10 km squares which are given a two number reference 00, 01, 02 . . . 99. The large squares and the number reference then gives rise to the WAB area; eg SP38, TL00, J04, G28, etc.

Great Britain and Northern Ireland are broken down for administrative purposes into counties. The boundaries of these counties are drawn up approximately along the line of the ‘Mid Glamorgan’ and one contact with VK3RAN at Castlemaine Group member and one contact with VK3RAN will be on air as often as possible to obtain the award.

The WAB area is then linked with the county; eg HP61 Shetland Isles, SP38 West Midlands, SS98 Mid Glamorgan, C82 Antrim. There are in excess of 450 WAB areas.

To work someone who contact the wireless office (VK3RAN) on board HMAS Castlemaine at Gem Pier. Applicants must have contacted one HMAS Castlemaine Group member and one contact with VK3RAN HMAS Castlemaine to become eligible for the Award.

The commencement date is retrospective to 1st January 1986.

For amateurs residing in Australia and New Zealand — SSB 20 points or CW 10 points. For amateurs residing in Oceania — SSB 15 points or 10 points for CW.

The WAB area is then linked with the county; eg HP61 Shetland Isles, SP38 West Midlands, SS98 Mid Glamorgan, C82 Antrim. There are in excess of 450 WAB areas.

The Award will be endorsed only at the request of the applicant, for the following endorsements:

For amateurs residing outside Oceania, contacts with VK RNARS members (including VK3RAN Group Members) and with VK3RAN HMAS Castlemaine Radio Office on the 3.5 MHz band will count double points.

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MANLY WARRINGAH RADIO SOCIETY

The Manly Warringah RS wishes to invite all members and visitors to attend the Annual General Meeting on Wednesday, 9th July 1986, at 7.30 pm, where duties such as election of new office bearers and committee will be conducted.

The Manly Warringah Radio Society celebrated 10 years as a radio club, by re-fitting the club radio shack with a new HF transceiver, plus the licensing and installation of a 70 cm voice repeater.

The club repeaters, VK2RM8 146.875 MHz and 438.175 MHz, provide excellent coverage, primarily throughout the northern beaches of Sydney. The Society also operates a multi-protocol packet repeater, which was the first operational packet repeater in New South Wales.

Location is the Warringah Volunteer Services Centre, Aumuna Road (East), Terrey Hills.

FOREST HIGH SCHOOL

The Forest High School, invites amateur operators, especially ex-students and staff, to participate in an Amateur Radio Day to be held on 4th July 1986, as part of the school’s 25th Anniversary Celebrations.

The school station VK2KFA will be operating on 80, 15 and two metres (FM and SSB), during the day and will welcome any calls.

For further information contact: The Amateur Radio Group, Forest High School, Forest’s For- est, NSW, 2086.

PACKET RADIO IN ALICE

Packet radio was inaugurated in Alice Springs on 14th May 1986, when VK8RP and VK7RP made a call using a TAPR TNC2 and an PK-64. Quickly to follow on-line were — VK8s TM; BB and ZMO, which insisted on a liaison call sign.

The protocol chosen by the Alice amateurs for the local standard is AX.25 Level 2 Version 2. In order to conform with the Region 3 designated standard, as well as to have compatibility with the up-coming amateur satellite capabilities of JAS-1 and AMSAT III-C.

Other amateurs in Alice are also currently working to come up on-line soon.

As all of the amateurs now on packet in Alice Springs are also active on OSCAR, the packet network in Alice Springs will be able to extend beyond its physical isolation via satellite links.

The amateurs involved hope to be able to experiment with such links in the near future with other stations around Australia. If their is anyone interested in trying out an OSCAR packet link with the Alice, or have any information to help, the group will be very pleased to hear from you. Write to Rick VK8RP, 44 Memorial Avenue, Alice Springs, NT. 0870.

DEVIL NEWS from North West Branch

A group of 14 members and three visitors attended the North West Branch, where all routine matters were attended to.

During General Business, the meeting was told that a new Broadcast List would be prepared shortly by the Southern Co-ordinator.

VK7S OW; KH; SF; EG and ZBT were thanked by Rob VK7KAB, for their assistance with the Rotary Display Auction which was held during May. Rob also suggested that planning work should begin now for TARK 87, and members should begin collecting surplus equipment for the TARK auction.

Planning for Camp Quality is proceeding very well.

On the first Sunday in May, the VK7WI Weekly Broadcast began at 0900 EST and resulted in Andrew VK7ZHA being awarded the Gong Award for the month — he forgot the change of time and slept in.

The 80 club now has its own OSL card for station VK7NW, which coincides very well with the setting-up of the station in another part of the Penguin High School. Recent Activity Night has been taken up with the move to the new room is on the opposite side of the building. As the new room is much larger for the permanent set-up of VK7NW, regular operation from the station should be much better.

Greg VK7ZBT, has been given the job of procuring a Great Circle Map and Bill VK7WL, is to get a large map of Australia for the station wall.

There is still much work to be done on the aerials and Greg has volunteered to make a 70 cm antenna.

There has been very little RTTY operation of late, but with the new focus it is anticipated that regular broadcasts will resume. (Just now this happens of course will depend on how many volunteers volunteer when needed).

One of the Branch members, Owen VK7OL and his wife Nancy, are doing an extensive trip of the mainland, visiting their children in South Australia and Darwin. They also intend to visit many amateurs along the way and Owen and Nancy are expected home next month.

Meetings of the Branch are held at the Penguin High School, on the second Tuesday of each month, commencing at 7.30pm. Visitors are most welcome and are directed to the venue via the two metre repeater — Repeater 3.

On 20th April, the North West ATV Group commissioned its second Amateur Television Repeater, which is operational under the call sign of VK7RBE.

The repeater is located on Kelsseys Tier, near Devonport on the property of Ron VK7RN. Ron has kindly made his property available as a site for the repeater and thanks are extended to him.

The prime role of this repeater is to allow amateurs in the Devonport area to transmit and receive noise-free pictures in Devonport and the surrounding area.

Uplink carrier frequency is 444.250 MHz and downlink 579.250 MHz (Horizontal Polarisation). Persons interested in viewing the output channel are reminded that the downlink frequency falls in Band 4 allocation of the UHF Television Spectrum (put simply a weak signal appears at Channel 34/2 on a UHF television tuner). However, the proverbial piece of proof will prove insufficient for noise-free reception of the device as its power output is relatively low. A good quality high gain antenna cut for UHF will guarantee good pictures.

The radiation pattern is omni-directional with a full 360 degrees in the horizontal plane.

Known amateurs to be transmitting good quality pictures through the repeater are Jack VK7MW and Andrew VK7ZAR.

It may be timely to point out to listeners that we often hear and read that the majority of amateurs are Black Box and appliance operators these days, and where are the true amateurs ? ? ? This repeater and the other ATV repeater, VK7RTV, which is operated by Brian VK7BU on Mobile 3, with the exception of the receiver IF systems, are completely home-brew. This includes the receive converters, control systems, transmitters and all antennas.

To date, much experimental work has been carried out by the ATVers with antenna and propagation on the UHF bands.

Thanks to Tony VK7AX for supply of the ATV notes.

Contributed by Max Hardstatt VK7KY

ORANGE AMATEUR RADIO CLUB

During December 1985, the Orange Amateur Radio Club made free checks of two-way radios which are used during bushfires. The checks were carried out by professional mechanics using the latest test equipment, under the guidance of members of WICEN.

Minor adjustments were made where required and major problems were referred to commercial repair shops.

Bob Moore VK2DSM, Vice-President of OARC, operates the Motorola Test Set.

29th JOTA 1986

The 29th Jamboree on the Air will be held over the weekend of 18-19th October 1986. The event will begin at 0001 hours local time on the Saturday and will end 48 hours later at 2359 hours local time on the Sunday Stations may operate for all or any part of this period.

Participation is extremely simple:

All stations must operate strictly in accordance with their own national amateur radio regulations. Call "CO Jamboree" or answer any station using this call.

Any authorised frequency may be used. It is suggested that operators call, or search for stations, around the agreed world Scout frequencies listed below and that, once contact is made the operators move to another frequency to continue the contact.

Agreed World Scout Frequencies

CW: 80m — 3.590; 40m — 7.030; 20m — 14.070; 15m — 21.140; 10m — 28.190 MHz.

Phone — 3.740 and 3.940; 40m — 7.090; 20m — 14.290; 15m — 21.360; 10m — 28.990 MHz.

All stations are required to send in a report of activities in accordance with arrangements made by the National JOTA Organisers.

An attractive participation certificate has been designed and supplies will be sent to all National JOTA Organisers well before the event. The World Scout Bureau will also send OSL cards.

Contributed by Laszlo Nagy, Secretary General, World Organisation of the Scout Movement Organisation.

29th Jamboree-on-the-air

18-19 October 1986
A R Showcase

To locate suitable stories, a competition is being conducted whereby anyone entering a 200 to 500 word tall story has the opportunity to win a weekend for two at the facility. One weekend will be given away every month for the remainder of 1986.

Choose any topic, and write between 200 and 500 words and send your story to: Tall Stories, c/o Holiday Inn Surfers Paradise, 22 View Street, Surfers Paradise, Qld. 4217.

VICOM WINS COMMUNICATIONS CONTRACT

Vicom Australia Pty Ltd, the Australian-based RF communications engineering company, has won a contract worth $A526 000 in the supply of MF and HF communications receivers to the Overseas Telecommunications Commission (Australia). The receivers, manufactured by Dansk Radio AS of Denmark, will be remotely controlled from OTC(A)'s receiver facility at Brindelly, NSW. OTC(A) is currently involved in a program to upgrade its MF/HF equipment with state-of-the-art technology.

The total system comprises 24 model RX4000 receivers, 13 model RC4000 controllers, matrix switching and associated equipment, and includes specialised software which integrates the system to OTC(A)'s particular operating requirements.

Dansk Radio AS was founded in 1920 and has provided high quality communications equipment to over 50 countries. They have been represented in Australia and New Zealand by Vicom since 1976, during which time a large number of transmitter and receiver installations have been made. Vicom is a fully integrated high-technology company specialising in niche electronics for government and industry.

NEW MONITORING AND SURVEILLANCE SCANNER

The AOR AR-2002, a new programmable monitoring and surveillance receiver, is claimed to be above and beyond anything previously available. Its wide frequency coverage combined with the reception modes of AM, FM (wide bandwidth) and FM (narrow bandwidth) make it ideal for general off-air monitoring, spot frequency monitoring/measurement, selective multi-frequency analysis, spectrum surveillance, detection of innovated transmissions and general scanning.

The AR-2002's two frequency ranges are covered in user selectable increments of 5, 12.5, and 25 kHz. A triple conversion configuration with a first IF of 750 MHz provides a typical sensitivity of 0.3 uV for 12 dB S/N at its operating range of 25-550 and 800 to 1300 MHz.

Control of the AR-2002 can be either from a professional front panel keyboard or rotary tuning control. External control is also available via a rear panel mounted interface socket.

Twenty internal memories are provided to the user. They can be used to store both frequency and mode information which may then be recalled manually, or automatically scanned.

The readout is a liquid crystal type indicating frequency, mode, memory channel number, frequency increment, delay on/off, channel lockout and priority operation. A bar type LED signal strength meter allows comparative measurements to be made and aids in direction finding work.

Power requirements are 12 volts DC or 240 volts AC. Antenna connection is via a rear mounted BNC connector. The size, 138W x 80H x 200D mm makes it ideal for both fixed and mobile operation.

For further details on the AR-2002 contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. 3132. Phone: (03) 873 3777.

SCANNING RECEIVER

The Microcomm Model SX-155, a portable programmable receiver, is small, lightweight, rugged in construction, and has 160 memory channels which make it ideally suited to the tough life of professional electronics.

The 160 memory channels are divided into four groups of 40 channels, each with its own priority; e.g. a total of four priority channels.

Frequency coverage is 26-32, 68-86, 138-176 and 380-514 MHz with a sensitivity of less than 0.5 uV over this range. An automatic search and store function is also built-in.

Using this feature, an operator can set two frequency limits anywhere within the SX-155's range and let the radio do the rest — it will automatically look at each frequency for activity. On finding an active channel, the frequency is stored and the search resumes. If that frequency is stored on a previous search it will not be duplicated.

The unit is manufactured from tough extruded aluminium section, is powered by rechargeable NiCad batteries and is supplied complete with a charger, carry case and rubber antenna.

The AOR AR-2002, a new programmable monitoring and surveillance receiver from GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. 3132. Phone: (03) 873 3777, to whom all inquiries should be directed.

HOLIDAY INN WITH TALL STORIES

The deluxe international hotel, Holiday Inn Surfers Paradise, located on the Gold Coast, will feature a public bar called Tall Stories. In keeping with its name, the walls of the bar will be decorated with a selection of the tallest tall stories, plus illustrations.

STRANGE BUT TRUE

A not-so-newly-licensed amateur purchased a 144 MHz Yagi antenna to replace a chimney-mounted collinear used for local FM operation: a few days later he returned to the dealer demanding his money back, saying the Yagi was a far worse performer than the collinear. The dealer was rather surprised and asked the amateur how he had installed it. It then emerged that the customer thought that vertical polarisation meant mounting the antenna with its boom vertical and the array pointing directly upwards...
REPORT OF 1986 AGM

The Annual General Meeting of the NSW Division was held on 5th April, at Granville RSL Club. The meeting was opened by the Divisional President, Peter Jeremy VK2PJ. The Returning Officer, Robert Dolfini VK2EDR, advised that there were 622 formal votes in the ballot for the office of President. Tim Mills VK2ZTM, Dennis Williams VK2LW and Mark Hunkin VK2KAA, nominees for the position of President, were, in order of polling, Jeff Pages VK2BYY, Roger Henley VK2ZIG, Peter Jeremy VK2PJ.

The Chairman accepted the point of order, following which a motion to delay the Agenda be dealt with first. This was defeated, and the Chairman ruled that the motion could be dealt with. Motion 9(a), that the agenda of the Annual General Meeting of the NSW Division be amended by the cancellation of item 9(d) was carried.

A lengthy debate ensued on whether or not this meeting could vote on motion 9(a), and eventually the Chairman ruled that the motion could be dealt with. Motion 9(b), that the agenda of the Annual General Meeting of the NSW Division, be amended by the addition of items 9(c) and 9(d), was defeated.

Under General Business, a motion was raised from the floor that the Chairman's ruling was moved and carried. A lengthy debate followed on whether or not this meeting could vote on motion 9(a), and eventually the Chairman ruled that the motion could be dealt with. Motion 9(c), that the agenda of the Annual General Meeting of the NSW Division be amended by the addition of items 9(e) and 9(f), was carried.

The Annual General Meeting of the NSW Division awarded its 75th Anniversary Medallions to the following members who have made an outstanding contribution to their local and District Amateur Radio Clubs and the NSW Division.

The New South Wales Division awarded its 75th Anniversary Medallions to the following members who have made an outstanding contribution to their local and District Amateur Radio Clubs and the NSW Division.

Surplus Equipment

The list of items available from the Divisional Office as mentioned in the May Mini-Bulletin has now been replaced with a new list. If you would like a copy send a SASE to the Office at PO Box 1066, Parramatta, NSW, 2150.

75th Anniversary Medallions

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NEW MEMBERS

A welcome to the following members who joined during February and March 1986.

D J S Baume VK2NDB, Narrabeen; R Bennett Assoc, Hornsby; P N L Blake VK2NOD, Beecroft; R P Buono VK2PEN, Ryde; R L Gibbons, VK2EJY, Hornby; D W Gordon; N Cowgill VK2NEV, Eden; G F English VK2JJP, St Ives; M S Ewing VK2ERX, Epping; R A Fraser Assoc, Wilberforce; M J Gilbert VK2ZBYG, Merewether; F F Hicks Assoc, South Cambden.

The New South Wales Division awarded its 75th Anniversary Medallions to the following members who have made an outstanding contribution to their local and District Amateur Radio Clubs and the NSW Division.

H E Kangler VK2ZCH, Scotland Island; E Lahedny VK2NZL, Thredbo Village; D E Law VK2AIL, Tumbling; M G Maxwell Assoc, Hamilton South; W R Petrone VK2DCZ, Fairfield; R A Plater Assoc, Concord; B G Powell VK2A2Z, Arcadia; P G Vane Assoc, Dubbo; E J Virtue VK2EJV, Dunoon; H W Waugh VK2CHW, Rydalmere; J Wipp VK2AUN, Croner.

The New South Wales Division awarded its 75th Anniversary Medallions to the following members who have made an outstanding contribution to their local and District Amateur Radio Clubs and the NSW Division.

S Wood Assoc, Hornsby Heights; R W Blake Assoc, Marys Bay Beach; J M Castellano Assoc, Caringbah; K B Dowle Assoc, Manly; G B Thrum VK2CGT, Malua Bay.

TOWER CASE

Following is a statement regarding the Reedman Tower Case which was agreed to following discussions between the writer and Dennis Reedman.

The case of Dennis Reedman VK2DUJ versus Rockdale Municipal Council, and the involvement of the WIA NSW Division in this affair, has been the subject of some discussion and correspondence in recent months. In particular, the question of financial assistance to Dennis Reedman from the Division was raised at the 1986 Annual General Meeting, and a resolution to donate $1000 to towards his expenses was carried.

From what was said at the Annual General Meeting, I understand that there were discussions between myself and Dennis, and he becomes apparent that, for variety of reasons, the Divisional Council of the day was not fully aware of the circumstances surrounding the case. At that time the original decision regarding financial support was made. Undoubtedly, a contributing factor here was the retirement from Council of Susan Brown in November 1985. From the minutes of that time Susan had been acting on behalf of the Divisional Council in this matter. This change of personnel at what was a crucial time in the case, led to a breakdown in communications between Dennis Reedman and Divisional Council, which subsequently developed into a standoff situation.

It would now appear that Dennis Reedman acted correctly in his dealings with Rockdale Council and the Land and Environment Court, and in view of this I have no hesitation in retracting my report on the case which was published in Amateur Radio Action, Volume 8, Issue 13, and in...
particular any remarks which may have inferred that Dennis had acted improperly in any way. In fact, immediately after the Annual General Meeting, I contacted the editor of Amateur Radio Action to request that my report not be published, but by then it was too late.

With hindsight it is easy to say that the Council should have done that, or that Dennis should have done that, but what happened is now history and cannot be altered. Thankfully, this dispute is now resolved to the satisfaction of all concerned, and in particular, I would like to thank Colin Davidson for his assistance in reaching this settlement.

Signed: Jeff Pages VK2BYY, Secretary.

NEW YORK TOWERS

Bills have been introduced in both houses of the New York state legislature relating to the construction of towers. The legislation would restrict towers to a height of the tree-line or 50 feet, whichever is lower. An exception is given to towers attached to a residence.

From The ARRL Letter, 9th May 1986

ANNUAL GENERAL MEETING

At the recent AGM of the Victorian Division of the WIA the following members were elected to Council. Further appointments will be made in due course and will be announced in this column.

COUNCIL FOR 1986

John Adcock VK3ACA; John Ambler VK3DJE; Andy Chan VK3DPJ; Des Clarke VK3DES; Jim Linton VK3PC; Alan Noble VK3BBM; Geoff Smith VK3ADB; Neville Stiggel VK3CNS; Bill Wilson VK3DXE; Barry Wilton VK3XV.

OFFICE BEARERS 1986

The 1986 Office Bearers for the Victorian Division were chosen from the above and are as follows:

President: John Adcock VK3ACA
Secretary: Managing Editor: almonds DL7RVE
Treasurer: Lindsay Renfich VK3KAF

ZONES

Zones will be represented on Council by the following councillors. This means that each Zone of the Division has a voice on Council.

North-west Zone: Des Clarke VK3DES; Eastern and East Gippsland Zone: John Ambler VK3DJE;
Midland Zone: John Adcock VK3ACA; South-central Zone: John Linton VK3PC;
North-east Zone: Barry Wilton VK3XV; Western Zone: Geoff Smith VK3ADB.

SPECIAL OFFICERS

Broadcast Chairman: David Johnson VK3YWZ;
OTAC Chairman: Peter Mill VK3ZPP;
WICEN Chairman: Leigh Baker VK3DCP;
Disposals Officer: Arthur Fraser VK3BII;
Building and Property Officer: Neville Stiggel VK3CNS;
Class and Education Officer: Fred Swainston;
Intruder Watch Co-ordinator: Bill Wilson VK3DXE;
Book Sales Officer: Peter Ford VK3YTB;
Librarian and Historian: John Adcock VK3ACA.

NEW MEMBERS

During the month of April, the following new members were welcomed to the VK3 Division:

Soebijakto Adinegoro YC0CA; Anthony Anderson VK3VBG; Emilie Armanlie; Leigh Baker VK3DCP; Adrian Bland; Stephen Brough VK3PQ; M. Burchard VK3XIP; Andrew Chanter; John Davey VK3AXW; Robert Ferguson VK3ZRF; Lorraine Gardner VK3NOE; Phillip Gledhill VK3SN; Damian Jones VK3PJ; Dale Lenke VK3XZ; Stephen Lenke VK3ZLF; Mark MacKenzie VK3XU.

Kurt Brauer HB9AMZ; Stephen Cardwell; John Dafailas; Phillip Hardstaff VK3XGK; Charles Howes VK3XCH; William Joiner VK3IP; Richard Law VK3XZ; Stephen Lenke VK3ZLF; Mark MacKenzie VK3XU.

John Reardon; Glenn Rickard; Ross Taylor; John Whitehead VK3BLK; R Gower

QSP

△ AUSSAT Pty Ltd, owner and operator of Australia's national satellite system, is calling for tenders for second generation satellites, satellite control facilities and equipment.

AUSSAT's second generation system will provide replacement communication capacity for the first generation of satellites and prospectively a range of new applications and other satellite related services.

AUSSAT is aiming to issue a formal call for tenders in mid-1986, with the schedule date for mid-1986, for the finalisation of the contract.

This will enable AUSSAT to launch second generation satellites in 1986, in time to replace the first satellites which will be nearing the end of their seven-year life.

Meanwhile a basic design concept is being developed which will include, for consideration, a number of additional applications, such as the provision of meteorological capability, remote sensing, mobile communication services and scientific applications.

From Telecommunication Journal, Vol 53, IV/1986

JOHN MOYLE FIELD DAY

A brief summary of the activities of VK1WI, during the John Moyle Field Day Contest follows.

The contest was most successful, with a large number of VK1 amateurs and their families helping to run the station, camp out in the mountains and observe Halley's Comet. A total of 354 contacts were made, including Adelaide on two metres, Sydney and Melbourne on 70 cm (perhaps by aircraft enhancement?), and a lot of fun for all involved.

We operated on all bands (except the WARC bands), from 160 metres to 70 cm. We had 23 cm equipment and antenna but never got round to firing it up. There were rigs, cables and antennas everywhere, somehow co-ordinated, in a great display of logistical supremacy, by Phil VK1PJ.

And, for the information you are waiting for — the winner of the inaugural VK1 Favoured Club Award for the contacts on the most number of bands in the contest. The winner is:

VK2WG — Wagga Radio Club.

They worked on seven bands — 80; 40; 15; 10; 6; 2 and 70 metres. They only missed out on 160 and 200 metres. Close contenders were VK3CNE (80, 40, 6 and 2 metres) and, except for no six metre openings, VK8YL (60, 80, 40, 20 metres).

To those clubs who missed out — we will be there again in 1987, with the prospect of improved conditions next year, look out for VK1WI.

From The ARRL Letter, 9th May 1986

The contest was most successful, with a large number of VK1 amateurs and their families helping to run the station, camp out in the mountains and observe Halley's Comet. A total of 354 contacts were made, including Adelaide on two metres, Sydney and Melbourne on 70 cm (perhaps by aircraft enhancement?), and a lot of fun for all involved.

We operated on all bands (except the WARC bands), from 160 metres to 70 cm. We had 23 cm equipment and antenna but never got round to firing it up. There were rigs, cables and antennas everywhere, somehow co-ordinated, in a great display of logistical supremacy, by Phil VK1PJ.

And, for the information you are waiting for — the winner of the inaugural VK1 Favoured Club Award for the contacts on the most number of bands in the contest. The winner is:

VK2WG — Wagga Radio Club.

They worked on seven bands — 80; 40; 15; 10; 6; 2 and 70 metres. They only missed out on 160 and 200 metres. Close contenders were VK3CNE (80, 40, 6 and 2 metres) and, except for no six metre openings, VK8YL (60, 80, 40, 20 metres).

To those clubs who missed out — we will be there again in 1987, with the prospect of improved conditions next year, look out for VK1WI.
CORRECTION
Please note that in the list of Divisional Councilors for 1986, Hugh Clegg VK4SAK, not only had his surname wrongly listed, but his job was also in error. Hugh is the QSL Liaison Officer, has held the post for a couple of years and does a very good job of sorting out the inevitable problems that arise in the QSL sphere.

BARCFEST 1986
To say that this year's event was a huge success is a gross understatement (can you have a gross understatement?). The visitors to the Indooroopilly State High School that Saturday, 10th May, were numbered in their hundreds. There were many exhibits. One in particular was a one man effort by Barry VK4ZAU, who unravelled the mysteries of satellite operation to a large number of interested amateurs. Barry's enthusiasm must surely spark a greater interest in satellite working by more VK4s. Rob VK4KUG and Michael VK4YO, did a roaring trade in RTTY circuit boards. South East Queensland Teltype Group member subscriptions. The group were offering 20 and 25 percent discounts for de-modulator, modulator and scope PCBs for the occasion. Rob had his computer programmed to give the RTTY story on an impressive colour monitor with pages and pages of information available at the viewers choice. Packet radio was on display and likewise, ATV. One of the big attractions of the day was the quantity of bargains available in second hand treasure. Some top-notch items went for almost give-away prices.

Dave Prince VK4KDR, spokesman for the Brisbane group, said that this year's affair was the best ever.

SIX METRE REPEATER FOR CENTRAL QUEENSLAND
Gladstone and Rockhampton amateurs are combining in their efforts to put a six metre repeater on the air. The project is still very much in the initial stage. If the plans come to fruition by next summer, this repeater could bring many surprises at the seasonal DX peak. If, when, frequency, and location will be advised when to hand.

TOWNSVILLE DOES IT AGAIN, SO CAN YOU!
Backscatter is the official bulletin of the Townsville Amateur Radio Club. In a recent issue, Evelyn Bahr, the journal's editor, wrote this —
I guess you have all read those tales of gloom and doom about the advanced age of amateur radio operators, and the problem that may exist for our hobby in the future. I presume the homework has been carried out correctly, so what as a club can we do about it.

We can not put the clock back, but what we can do is to look to the future — and just put the chance up to influence operators. Two chances spring to mind for the IARC to do just that in the near future; ie the Fete at the Cathedral School and Entertainment in the Parks. These are both ideal locations to present amateur radio to all ages.

Even if the bands are as dead as a dod to the experienced operator has wonderful tales to tell of how and why and when some great contact was made, or the latest building project and all its possibilities.

If we have all these experienced old timers at home, I feel it is time that we got them out and about occasionally. I think we should forget about our gray hairs and rheumatism and occupy ourselves with youth, in such schemes as the Youth Radio Scheme or School Clubs.

Do not forget it is not only the juniors who will be learning, remember the saying By your pupils you will be taught. Life will not be dull anymore.

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

Five-Eighth Wave
At the AGM on Tuesday, 22nd April, the following changes to the Constitution were passed.

Clause 5 now reads: 5. The Institute will be governed by a Council of ten members. Seven shall be elected at the Annual General Meeting of the Institute each year as hereinafter provided. The Immediate Past President, the WICEN Director, and the Federal Councillor shall by reason of their office be members of the Council without election.

Clause 43 now reads: 43. The Yearly Subscription for Members and Associate Members shall be paid once only, and may be decided upon by the Council from time to time.

Clause 44 now reads: 44. Subject to last preceding Clause 43, the first subscription shall be payable on application and subsequent payments at 12 monthly intervals thereafter, except where payment by installment may be approved by Council.

We thank you for the years you have spent on Council, David.

We are pleased to announce that we have a new Program Organiser. Hans Van Der Zalm VK5KHZ, has very kindly volunteered to take over that position and although we have quite a few members, Bob Allan VK5BHA and Peter Maddern VK5PRM. We hope that they will enjoy their time on Council.

BURLEY GRIFIN BUILDING MEETINGS
June 29th — Buy and Sell Night. Begins 7.45 pm.
July 22nd — General Meeting. Speaker, Steve Mahoney VK5AIM, on Antenna Rotators. Meeting begins 7.45 pm.
June 29th — Buy and Sell Night. Begins 7.30 pm.

We are pleased to announce that VK5 amateurs may use the VI-prefix from the 1st July 1986 to 31st December 1986, to celebrate our 150th year (the State of South Australia). We hope that you will all make full use of it — but please do not bother to use it if you do not intend to QSL with that prefix. Many stations in the past have been disappointed by being sent a special commemorative prefix, only to have the station QSL with his ordinary call sign. Let us keep the goodwill flowing from VK5 this year.

LIKE TO HEAR FROM ANYONE!
It has been suggested that there could be a number of retired persons who would prefer to do a Novice or Bridge Course during the daytime, instead of coming out at night. As our current instructors are all employed during the day, I wonder if there are any retired teachers, Telecom
WHO CAN'T LEARN THE CODE?

Reprinted from 73 Magazine, February 1972

"I'd give anything to get an amateur licence, but I'm one of those people who just can't learn the code." It seems there are more of these unfortunate each year swirling around the fringes of amateur radio. Let me tell you how this supposed inability to absorb an elementary skill all began.

Many years ago there was no such thing as a person who couldn't learn the code. With equal enthusiasm young Johnny Ham tackled learning the code and how to build and operate his station.

The required code speed in those days was only 10 words-per-minute for the General Class licence, but then the only reason the FCC has since raised it to 13 WPM, I understand, was in response to the widespread conviction that the present generation was at least 30 percent more on the ball than the preceding one.

Then along came WWII with its urgent demand for far more military CW operators than amateurs could possibly supply. The armed forces set up radio schools and one of the entrance requirements was to pass a code aptitude test. Fellow with recent exposure to military methods can vouch safe that even today the armed forces are not notably successful in placing men in the areas of their greatest talent and interest.

Imagine then how it was all those years ago in the hurry and confusion of an approaching war. Great numbers of would-be radio operators were told they had no code aptitude and were summarily sent off to become cooks or hospital orderlies — for which they probably had no aptitude either.

During the past year, the Federal Technical Advisory Committee (FTAC) investigated and produced Policy Papers on Band Planning, Packet Radio and Repeaters. This year it is Beacons which are to be investigated.

To date, Australia has developed and operates beacons on bands between 10 metres and 23 cm, with one on 10 GHz, in VK6 and 10 and 24 GHz being developed in VK2.

The function of a beacon varies depending upon the use each person makes of it. In the world of marine and aviation navigation, radio transmissions from a known position provide the bearings to calculate one's location.

To a radio amateur, a beacon provides a mixture of uses. Primarily, it is an aid to research and experimentation into the hobby. If one is local to a beacon transmission, it provides a source to check receivers and antennas against. If it is a distant transmission, then it provides an indication to the observer of a radio path between the two locations. On the microwave frequencies a beacon can often provide the only consistent signal source to enable one to become established on the band.

Australia's present beacon development can be divided into three groups:

BEACON PLANNING

During the past year, the Federal Technical Advisory Committee (FTAC) investigated and produced Policy Papers on Band Planning, Packet Radio and Repeaters. This year it is Beacons which are to be investigated.

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Australia's present beacon development can be divided into three groups:

1. The CW Man — "The only way to fly!"
2. The XYL
3. The DXer — "First we send 'DE', then our own call.
4. The RTTY Man — "How do you get 26 Characters from only ONE Key?"
5. The CW Man — "The only way to fly!"
7. The Novice — "What else is there."
8. The Extra Class — "Nothing to it!"
9. The Novice — "What else is there."
10. The Extra Class — "Nothing to it!"

11. The Extra Class — "Nothing to it!"
12. The CW Man — "The only way to fly!"
14. The XYL
15. The DXer — "First we send 'DE', then our own call.
16. The RTTY Man — "How do you get 26 Characters from only ONE Key?"
17. A Typical CW Operator.
18. The Novice — "What else is there."
19. The Extra Class — "Nothing to it!"
20. The CW Man — "The only way to fly!"
22. The XYL
23. The DXer — "First we send 'DE', then our own call.
24. The RTTY Man — "How do you get 26 Characters from only ONE Key?"
26. The Novice — "What else is there."
27. The Extra Class — "Nothing to it!"
REPORT OF THE AGM — APRIL 1986

The Annual General Meeting, held on 15th April 1986, was held immediately following the General Meeting. It was declared by the President that there were no nominations for Council and that the existing Council had decided not to re-nominate in order to encourage new blood. This left an impasse which the President resolved by invoking the Constitution which declares that, in the event of there being no nominations for Council, the existing Council will continue until replaced. Which means that your Council is a caretaker Council until the next AGM.

Reports were given by the Officers of the QSL Bureau, the WICEN Group, the Treasurer and JOTA. Votes of thanks were given to those concerned.

The resignations were regretfully received from our two auditors, Frank VK6JK and Adrian VK6HA. A vote of thanks was proposed and passed with acclamation. Two new auditors were elected, VK6TG and VK6HM.

There were no nominations for Council and that no general business had been notified but VK6WT was allowed to move a vote of thanks for the work by the President and Council over the past year.

VK6WZ was allowed to express regret that no reports had been received from either the Slow-Speed Morse Co-ordinator or the Broadcast Officer. This motion was lost as it was felt that it would amount to a vote of censure. Perhaps the officers responsible would note that the AGM is the time to report and it is the opportunity to record thanks to those who are on the teams.

The Patron for 1986 was discussed and it was agreed to ask the Governor of Western Australia to continue in this role.

PRESIDENT'S REPORT by Bruce Hedland-Thomas VK6OO

If this Annual report seems short, so did the year which it describes.

MEMBERSHIP

Because at the beginning of 1985 there were still problems with the computer in the Federal Office which prevented our receiving EDP sheets, it has not been possible to compare membership numbers from one January to the next. However, we can say that there were 744 members on 17th November 1984 and 754 on 20th November 1985. A net gain of members in what are still difficult financial times is credible and is no doubt due to those members whose dedication and personal commitment is such that they uphold the Institute in on-air and off-air conversations.

MEETINGS

General Meetings have continued as usual on the third Tuesday at Science House. In 1985, they were enlivened by a door raffle whose prize was a disposable, insulating plastic cup.

Don Lorrimer and Mark Bastin have continued to provide our cuppa at meetings and the problem of lack of volunteers to stay behind and help with the washing up has been solved by going over to disposable, insulating plastic cups.

The Christmas meeting was again organised by the re-doubtable Bastin family at the Westrail Centre and was potentially the best yet. In response to suggestions, it was held on a Saturday night to allow country members to attend. This rather backfired because few country members attended and we were unaware that because of the advanced average age of radio amateurs, a goodly number are contracted to baby-sit their grandchildren on Saturday nights, thus the expected attendance numbers were not reached.

FINANCIAL REPORT OF THE WIA (WA DIVISION) 1985


<table>
<thead>
<tr>
<th>1984</th>
<th>1985</th>
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<tbody>
<tr>
<td>20 152.08</td>
<td>22 858.61</td>
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<tr>
<td>1 123.81</td>
<td>3 501.59</td>
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<td>1 771.50</td>
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<tr>
<td>362.50</td>
<td>338.00</td>
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<tr>
<td>3 333.22</td>
<td>2 109.50</td>
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<tr>
<td>28 625.70</td>
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ASSETS

1. Cash
   - Contingency Account
     - Auscom Transfer Account
     - Auscom 1210 (14.5%)
     - Auscom 1236 (14.5%)
     - plus accrued interest

2. Trading Account
   - R & I Cheque Account
     - R & I Golden Account

3. Suspense Account
   - Auscom 1216 (14.5%)
   - plus accrued interest

4. flotation
   - Book Shop
   - Secretary
   - WICEN

5. 1 344.68

PROFIT & LOSS ACCOUNT — EXPENDITURE

1. ADMINISTRATION
   - Advertising
   - Printing and Stationary
   - Insurances
   - Radio Licenses
   - Postage and Boxes
   - Phone
   - Expenses
   - Government Bank Charges

2. LIFE MEMBERS
   - 108.75

3. AWARDS AND TROPHIES
   - 108.75

4. DONATIONS (MOUNT BARKER)
   - 95.00

5. CHRISTMAS DINNER
   - 1 027.87

6. CONTINGENCY FUND INTEREST
   - 3 067.20


We certify that we have examined the books and vouchers of the WA Division of the WIA, and have found them to be kept in a business like manner and to record the true financial position of the Division at the close of the period. We have received every statement in the writing of the accounts, and compliment Mr Bastin on the informative manner in which the bookkeeping has been kept and the final accounts presented.

Signed: F E Taylor VK6JK
Signed: A H Van Den Avoort VK6HA
Honorary Auditors — 8th April 1986.
achieved. I suppose you could call it a financial farce, but a social success.

There was a Special General Meeting called during the year to discuss constitutional changes at which the members decided to permit the Vice-President to chair general meetings without the President necessarily being absent and that they did not wish to have two Vice-Presidents at this time. As a result of debate at this meeting a constitutional review sub-committee was formed. It has just reported and its recommendations will probably form the basis of a further Special General Meeting.

**GENERAL**

The book-shop, managed by Christine VK6ZL, continued as our only activity which provides a service to members and simultaneously, an income for the Division. 1985, being the WIA's 75th Anniversary Year, there was a number of special items on sale by way of being momento of this historic occasion.

The following activities and services: WICEN: Slow Morse; OSL Bureau; JOTA Organisation; Intruder Watch and News Broadcasts were all carried on despite difficulties within and without and it is right to express our gratitude to the volunteers who run them.

Once again we have received cheerful cooperation and sympathetic consideration from the members of the local Department of Communication.

Finally, as President speaking on behalf of the members, I thank the Councillors and especially Fred VK6PF for their hard-working, dedicated service.

**COUNCILLORS FOR 1986**

<table>
<thead>
<tr>
<th>Name</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dave Wallace</td>
<td>VK6IW</td>
</tr>
<tr>
<td>Alyn Maschette</td>
<td>VK6KWN</td>
</tr>
<tr>
<td>Cliff Bastin</td>
<td>VK6LZ</td>
</tr>
<tr>
<td>Cyril Rice</td>
<td>VK6MY</td>
</tr>
<tr>
<td>Neil Pentfold</td>
<td>VK6NE</td>
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<tr>
<td>Douglas Gordon</td>
<td>VK6GG</td>
</tr>
<tr>
<td>Jill Weaver</td>
<td>VK6YL</td>
</tr>
<tr>
<td>Christine Bastin</td>
<td>VK6ZLZ</td>
</tr>
<tr>
<td>Michael Coates</td>
<td>VK6OQ</td>
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**Book-sales**

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<tr>
<th>PO Box 425</th>
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<tr>
<td>Fremantle, WA, 6160</td>
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**POSTAL ADDRESSES**

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<td>PO Box 10</td>
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<tr>
<td>PO Box F319</td>
</tr>
<tr>
<td>Perth, WA, 6001</td>
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**AMATEUR RADIO, July 1986 - Page 59**

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**TOWERS**

With the present publicity regarding antenna masts and the Institute, it may be of interest to follow the case which, at the moment, is being pursued in the Division.

1. **24th September 1985** — VK6PK applied to the City of Wanneroo for a Building Licence to erect a 12 metre mast. 2. **14th October 1985** — Letter received from the City requiring the written consent of eight adjoining owners. 3. Approval was obtained from six owners and submitted to the City. Of the two objectors, VK6PK received less than due courtesy being ordered off one premises as he was trespassing.

**Change in Amateur**

ARRL PETITIONS FCC

The ARRL has petitioned the FCC to require the labelling of electronic equipment relative to its susceptibility to radio-frequency interference. The request that the Commission require that a tag or notice be attached to any electronic device or its instruction manual advising whether the device incorporates shielding, filtering or circuitry designed to reduce its susceptibility to nearby radio transmitters. The tag or label also would warn the owner that if you feel your hobby is, No One Wants to Know, and it is up to us all to publicise anything which can credit amateur radio or, before you know it, your local council will have your antennas down.

**USA AMATEUR LICENSING as at March 1986**

<table>
<thead>
<tr>
<th>Class</th>
<th>1986</th>
<th>1985</th>
</tr>
</thead>
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<tr>
<td>New First-Time Amateurs</td>
<td>2001</td>
<td>1606</td>
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<tr>
<td>Novice Class Upgrading</td>
<td>933</td>
<td>877</td>
</tr>
<tr>
<td>Technician Class</td>
<td>418</td>
<td>311</td>
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<tr>
<td>Upgrading</td>
<td>196</td>
<td>230</td>
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<tr>
<td>General Class Upgrading</td>
<td>376</td>
<td>337</td>
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<tr>
<td>Advanced Class</td>
<td>128</td>
<td>124</td>
</tr>
<tr>
<td>Renew</td>
<td>1483</td>
<td>439</td>
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<tr>
<td>Change in Amateur Census</td>
<td>410</td>
<td>726</td>
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<tr>
<td>Month End Amateur Census</td>
<td>2850</td>
<td>2740</td>
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<tr>
<td>Active Stations</td>
<td>413</td>
<td>423</td>
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<tr>
<td>Increase in Amateur Census</td>
<td>2.3%</td>
<td>2.5%</td>
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</table>
EMERGENCY! ARE WE READY?

North America plays a vital role in Australia's amateur radio international communications emergency capability.

I would like to describe the situation so that more can join the work of the band of dedicated traffic handlers who maintain a daily international link.

The Australian Traffic Network is our equivalent to the US NTS and Canadian CTS.

Our major tie-in with the International Assistance and Traffic Net (IATN) at 1100 UTC (US Summer time); 1130 UTC (US Standard time) on 14.303 MHz, directed by VE6AJN; and the Australian American Traffic Net (AATN) at 0500 UTC on 14.280 to 14.290 MHz and directed by K7OV.

Generally one handles incoming calls and the other outgoing traffic. If any readers have any spare time between 0800 and 1100 UTC they would be welcome to check into both of these nets as liaison stations. This would help overcome the severe propagation fluctuations which cuts the traffic flow from one net for weeks at a time in some cases.

If the Mexico disaster happened tomorrow, the way the propagation is at present, we could feed traffic to the US NTS but outgoing traffic to Australia would be extremely difficult at 1100 UTC.

Having operators who could link both the IATN and the ATTN together would improve US, Canada and Australian capabilities of maintaining coordination for the next disaster.

During Mexico, we handled 600 messages by free telephone links to US amateurs, however, if these links were not available in the next disaster, we would only be as good as our present links.

Hence, there is an urgency to improve international capabilities. Any assistance from Australian amateurs would be appreciated.

The two links, IATN and ATTN, are of vital concern because a few short periods have demonstrated that emergency communications are best passed via North America, hence our world-wide capabilities are reflected in our links with IATN and ATTN.

Having a 7 MHz AMTOR on packet radio are continuing but are not reliable due to interference over the 10 000 km path, however, AMTOR mail-drop from 0600 to 0700 UTC, 7042.5 MHz is more reliable.

I would like to establish a 7 MHz AMTOR mail-drop from 0600 to 1600 UTC, beaming to the USA. AMTOR operators can access my mail-drop using the call from an officer at the DOC requesting further information. The officer was very helpful and informed me that he would advise the owner of the offending device to discount it or it would be confiscated.

Two days later I received a further call from the officer advising me that the device had been disconnected. I have suffered no further interference.

The DOC deserves applause for this excellent effort, and the speed with which it acted. Within five days of lodging my complaint the interference has ceased.

I hope that this story may help others who suffer interference on an already crowded band. It seems, however, that the DOC cannot act unless it has the telephone number or address of any interfering cordless telephone.

Chris Chapman VK3VCC, 2 Ravenscourt Crescent, Mount Eliza, Vic. 3930.

WHY NOT A COMPETITION?

Keep up the new trend of more construction articles in Amateur Radio. Why not have a competition for the best construction article contributed?

Al Edgar VK6ZAY, 15 Gledhill Way, Loxton, WA. 6155.

PIRATING A CALL SIGN

Having just received another QSL card from a ZL for a contact I never had, plus numerous other cards I have received from amateurs and SWLs alike for QSOs I haven't had, I would like to alert readers that my call sign has now been pirated for over two years — and I am getting a little tired of it.

At my place of work there are four other amateurs who, at some time or other have also had their call signs pirated.

I am sure the amateur fraternity ar not really aware of the extent of the pirating that goes on, or, 'don't care, unless it is their call sign that is being pirated. I read in the April issue of Amateur Radio of a VK7ZS who complained that a yacht was using his ZS call. This does not surprise me.

A definitive solution must inform me that a very high percentage of ocean going yachts carry unlicensed amateur transceivers. He personally knows of three such vessels.

It is not unusual when a yacht is for sale that an amateur transceiver is part of the inventory, as essential as a depth sounder or sextant. These people are naturally going to pirate someone's call sign. Frequently, when yachts reach Australian waters they use a Caribbean or Panamanian call sign.

There may be a simple way to reduce MM pirates. Every ocean going yacht, upon entering Australia has to be cleared by Customs and Immigration. When Customs go aboard searching for prohibited imports they could also look for illegal amateur transmitters. Perhaps this may be too simple. I have no answer for land-based pirates, except for very heavy fines and confiscation.

Long-time AR Member,

J Gravina VK4JS, 36 Robinson Street, Moorooka, Qld. 4105.

RISK OF CONTROVERSY

I wish to refer to the Education Notes by the Federal Education Officer, VK3KT, in April 1986 Amateur Radio. I too have a major concern for our present and future. Any prospective amateur is confused enough as things stand at the moment without mistakes creeping into the trial examination papers. I refer to question 4 where it is obvious to me, but perhaps not to someone else, that the symbol for volts has any help or information to eliminate this problem. At 11am the following day, I received a telephone call from the DOC requesting further information. The officer was very helpful and informed me that he would advise the owner of the offending device to discount it or it would be confiscated.

Two days later I received a further call from the officer advising me that the device had been disconnected. I have suffered no further interference.

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Chris Chapman VK3VCC, 2 Ravenscourt Crescent, Mount Eliza, Vic. 3930.
been used instead of onms. In question 17 the answer given is (c) but the correct answer is (a) as the correct interpretation is (1) the word "call" is interpreted as "hello". I think that if the WIA really wants more amateur operators on the air-waves and more members of the WIA, they will have to get their act together. Well, at this stage put me in the box-seat for an amateur operator. The novice to have the use of all bands including the CW portions at reduced power. Perhaps 10 watts on the HF bands and two watts on UHF and VHF.

The K calls could still be used by those who have to up-grade their CW and would have the use of full power on voice and reduced power on CW.

I also think the time has come for the WIA to press for RTTY, Packet Radio, ASCII and other such modes of transmission to become the subject of separate exams as the field has become too broad to be covered by a single exam paper and that the use of such modes of transmission be not allowed until the amateur has sat and passed the CW portion of the exam. In those exam papers should cover a smaller range of subjects in a more thorough manner.

In closing, I must ask the WIA if it has the intestinal fortitude to publish this letter in its entirety?
Yours faithfully,
Dennis Spark LS0100,
PO Box 19,
Goomalling, WA. 6460.

Why not, Dennis? Many good suggestions, or at least food for thought. The problem of ambiguous exam answers (and errors) is being discussed at present; we are well aware of it. —Ed.

NEW TO RADIO
I am only new to amateur radio, but I am very disappointed as when I switch on my set and hear someone talking, it takes ages for them to stop talking and give the next person a turn. I have spoken to a few amateurs who say the same thing. To me it is something to share. Another thing is when you are in a net and you are asked to say something by the time it is your turn again you have forgotten.

I still feel that amateur radio is a wonderful hobby.

During a holiday in New South Wales a few months ago I listened to four amateurs talking and using the repeater sensibly.

Yours faithfully,
Torry Blenkerton VK5ACB,
Box 384,
Bordertown, SA. 5268.

CAN'T LEARN THE CODE?
Upon reading Over to You in the May edition of Amateur Radio and noting Peter Scales VK6KHZ's remark "I was discouraged by the CW examination and would have been an amateur with the minute DOC test, I couldn't help finally putting fingers to the keyboard. I might say at this point that I don't really have any particular beef with the old exam. Peter's letter is a similar position to many others, but what I am about to say has been on my mind for some time now.

During the period of time that I have enjoyed the privileges of the amateur radio hobby, I have not ceased to be amazed at the number of amateurs and would-be amateurs who are fleeing the bands in despair at the thought of a CW test. "The uselessness of the whole exercise; out-moded; something out of the past", are remarks we have heard from others, no doubt. How difficult is it really to learn something as basic as Morse Code?

I recall a design in a hobby magazine some years ago, however I cannot remember which one. It had a Geiger-Muller tube — Mullard type MX 103. The question was had anybody got any information on it’s characteristics? Or has anyone got a Geiger Counter they would care to sell?

All letters received will be answered.

Pete Wexler VK6OF,
23 Waddell Road,
Palmyra, WA. 6157.

John Moyle Contest
The accompanying photograph was taken during the 1986 John Moyle Memorial Field Day Contest. Participation was up on Saturday one 15th March afternoon section using a TS-120S powered by a 12 volt lead acid accumulator which was charged by an E300 generator. The battery powered the rig, light and a fan during the hot daytime operating in the tent.

The tent, antenna (an all-band dipole supported by two gum trees), and equipment were set up at the site one hour prior to commencement of operating. A study of global wind pattern charts, which are readily available from Admiralty Chart Agencies, reveals that the mixing of Northern Hemisphere air with that of the Southern Hemisphere can easily take place at this time of year. If I recall correctly, the experts have predicted, via the national press, that it will be at least a year before the fallout will be detected in this country and that it will be harmless by then.

I rushed into the lounge room to the unpacked tea chests. My wife, concerned at me casting about for a book to read, replied "It is unlikely that this will be the last nuclear catastrophe and I would like to build a Geiger counter type备案."

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Pete Wexler VK6OF,
23 Waddell Road,
Palmyra, WA. 6157.
say "There's something wrong with your transmitter, OM" and I could have gone off the air to check the fault.

If anyone else hears a strange noise on the air — it may not be pirates but some poor operator that just needs a kind word and constructive advice.

Alan Stephenson VK1NUN, 100 Darwinia Terrace, Chapman, ACT. 2611.

PRÁCTICE DETRACTS FROM THE HOBBY

The use of commemorative call signs has recently become more frequent all over the amateur world. I don't think it's an organised international body of friends, we should go into competition with the state-owned commercialised postal authorities who, by now, issue commemorative stamps on the slightest pretext.

There is, of course, nothing wrong for a radio amateur association to issue its members, on request and on payment of a small fee, special commemorative QSL cards, to be adored with the sender's usual call sign. This has been done, for instance, for the 1000 year anniversary of the town of Steyr, in Austria.

Special calls and prefixes lead to difficulties in country identification, cause problems for newcomers to the DX bands and are not included in the data available for the call signs.
Solar activity was at low levels during March except for the period 3-5 when two energetic flares were observed. The region which produced these flares decayed as it crossed the solar disc and was without spots when it crossed the western limb on 15th March. The transit of this region produced an enhancement of the 10 cm path at active to minor levels between 0600-0900 UTC and at minor storm levels between 0900-1200 UTC on 25th. A = 29, 23, 19.

March 13
The field was at active levels.

March 22
The field was at active levels with brief periods of minor storm conditions. A = 18.

March 24, 25
The field was at active levels on 24th and at minor storm levels between 0600-0900 UTC and 1500-1800 UTC on 25th. A = 15, 24.

March 27
The field was at active to minor storm levels for the first half of the day. A = 19.

March was a quiet month with only one day, the 6th, on which the A index exceeded 25. The extended period of disturbance exceeded from 20-27 was weaker than expected and the A index only exceeded 20 on one day during this period. From data supplied by the Department of Science IPS Radio and Space Services — March 1986.

Solar Geophysical Summary — for March

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GEOMAGNETIC
March 6-8
The field became disturbed about 1030 UTC on 6th and remained at storm levels until 1500 UTC on 7th with the field generally active for the first half of the 6th. A = 18.

March 13
The field was at active levels.

March 22
The field was at active levels with brief periods of minor storm conditions. A = 18.

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Hamads

PLEASr NOTr: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers
* Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
* Copy in typescript, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162
* Reprints may be charged at full rates
* OTHER means address is correct as set out in the WIA current Call Book

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Ordinary Hamads submitted from members who are
deemed to be in the general electronics retail and
wholesale distributive trades should be certified as
referring only to private articles not being resold for
merchandising purposes.
Conditions tor commercial advertising are as follows:
$22.50 for four line*, plus $2.00 per line (or part
thereof)
Minimum charge — $22.50 prepayable
Copy is required by the Deadline as indicated below the
indexes on page 1 of each issue.

TRADE ADS
AMIOON FERROMAGNETIC CORES: Large range for all
receiver & Transmitting Applications. For data & price list
send 105x 220mm SASE to: RJ & US IMPORTS, Box 157,
Mortdale, NSW. 2223. (No inquiries at office . . . 11
Macken Street, Oakley), dosed for business during
July. Agencies at: Geoff Wood Electronics, Rozelle, NSW.
Truscott Electronics, Croydon, Vic. Willis Trading Co,
Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

FREE T O REPEATER GROUP
SIX CAVITY RESONATORS: of about 155 MHz working
frequency, but would probably tune down to the 2m band.
Size 60 cm x 10 cm diam. Weight each 5.3 kg. New owner
can pay freight. VK2AZT. Ph:(069) 421392.

WANTED — N S W
BASE STATION: 2m FM transceiver. VK2BZM. Ph:(02)
29 1768 BH or 498 2259 AH.
CIRCULAR PANEL METER: or meter movement. FSD-30
uA, resistance 1500 ohms. Any reasonable price. Also,
information on US Army Signal Corps BC-348-P radio rx.
especially the Handbook of Maintenance instructions — to
buy or copy. Andrew VK2EPO, QTHR. Ph:(02)636 9310.
TECHNICAL DETAILS: and/or circuit diagram for Pye
PS728 power supply. Will cover any expenses incurred for
photocopies, etc. Gerald VK2AGS, QTHR.
TRIANGULAR TOWER: section approx 7m high. Yaesu
FT-780R 70 cm all-mode and Bencher key paddle. Larry.
Ph:{02) 949 3124.
TRi-BAND BEAM: 3 elements or more in reasonable
condition. John VK2CJV. Ph:(02) 905024 AH or 888
9266, Ext 54 BH.
VALVES: pair 808 valves. VK2ZEV, QTHR. Ph:(02) 645
1078.

WANTED — V I C
TELETYPE MODEL 15: with reperforator/counter attachment. Model 14 tape distributor. Prefer non-sync motor
type. Colin Grade, PO, Cavendish, Vic. 3408, Ph:(055)
74 2319.
TONO 5000E: or equivalent. VK3CGG, QTHR. Ph:(057)
551124 AH.
YAESU FTDX-100: old SSB tcvr. Not necessarily in
complete working order but reasonable exterior appearance considering age. Ian VK3AYK. Ph:(03) 523 9405.

from 10W input. Exc con. $195. Laurie VK1KEL, QTHR.
Ph:(062) 54 2679.
YAESU FM-107M TCVR: In built PS supply plus all WARC
bands. In immac cond. YM-35 mic, Instr manual. $750
ONO, plus freight. Available mid- July. Jock VK1LI;
QTHR. Ph:{062) 881910 BH.

FOR SALE — N S W

YAESU FT-200: with FP-200 power supply. Spares. Good
order. $250. VK3VF; QTHR. Ph:(059)75 1475.

COMPUTER SYSTEM: Ferguson BIB two with two 8 inch
disk drives, KBD, power supply. CPM disks, misc S/W etc.
$450 ONO. IBM compatible, 640k mem, 2 disk drives, 20
Mbil hard disk, colour board, serial, parallel port, colour
monitor multi-function card, Diablo 630 Daisy Wheel 40
CPS printer. $3250 ONO. Will separate. Talley dot matrix
printer 9600 Baud. $200. 8 inch disk drives. SSSD. 240V
50 Hz 100.00. Contact VK2ZPM, QTHR. Ph:<02) 629
1904.

YAESU FT-200 TCVR: & matching FP-200 power supply.
As new condition. $250.1 kW HB linear by late Dick Pope,
copy of Heath product, 2 x 572Bs. $250. RAN type PRA-1
panoramic adaptor. This is a large unit weighing 70 lbs.
$65. 100TH power triodes, 4 available, 3 of which still in
cartons. $25 each. Ken Pincott VK3AFJ, QTHR. Ph:(03)
25 5775.

HUSTLER MOBILE ANTENNA SET: RM80 to 10 loading
coils (5). mast, spring, mounts, etc. $150. Roger
VK2DNX, QTHR. Ph:(02) 5461927.

ICOM IC-751 HF TCVR: /com IC-490, 430 MHz all- mode.

KENWOOD DG5: freq display for TS-520S, TS-520. $200
ONO. Kenwood ext VF0520. $200 ONO. Kenwood MC50 mlc. $40. Vanco 3 pos antenna switch. $20, H/B
10.15m 4 el Yagi. $50 ONO. I Wilkinson VK2PKB, QTHR.
Ph:(049) 32 8935 after 4 pm.

radios. All circuits
Ph:(079)79 2161.

NOVICE STATION: Kenwood equipment. TS-120V tcvr.
PS-20, AT- 120, VFO-120, Dynamic mic, manuals. $500
ONO. Kenwood AT-230. $150. Allan ex-VK2VOJ, QTHR.
Ph:(02) 888 3417.
supply. S/no 1011490. Best written offer to PO Box 40,
Bombala, NSW. 2632. Peter VKBDN/2.
UHF and VHF ANTENNAS: two 2m, 6 element Yagis. $30
ea. Two 2m, 12 element Yagis. $50 ea. Two 70 cm 17
element Yagis. $40 ea. Designed for satellite work and
built to NBS specifications. Matching baluns for all. Larry.
Ph:(02) 949 3124.
YAESU FT-101 TCVR: with mic, fan, instruction book,
good order. $375. Bruce VK2KBB, QTHR. Ph:(065) 52
2692.
$400. Trio 9R-59DS rx with manual. $100. Bob VK2VMX,
QTHR. Ph:(063) 51 4217.
YAESU FTDX-401 TCVR: very good, clean condition in
going order. Full legal power, complete with desk mic &
manual. Price $300. Ph:(066) 55 6135 AH.
YAESU FT-757GX HF TCVR: with MH1BB scanning mic.
FC-757AT auto antenna tuner. FP-757 HD 20 amp cont
power supply, owner and workshop manuals. Very good
condition in original cartons. Suit new buyer. $1750. Jim
VK2VRT, QTHR. Ph:(043) 41 7693.
YAESU FC-700 ANTENNA TUNER: in perfect condition,
original packing. $185. Welz 2 position coaxial switch with
UHF connectors, works up to 900 MHz, brand new. $30.
Yaesu RSE-2A stub tor 2m. $10. Yaesu RSL-3.5 80m
resonator. $30. Both in exc con. Write to VK1KEL, QTHR.
Ph:(02) 817 2652.

WANTED — Q L D

FOR SALE — V I C

COMPUTER: Tandy PC-2 Sharp 1500 with or without
peripherals. Must be reasonable price. PO Box 6051,
Calms, Qld. 4670.

BACK COPIES OF AR: 1968-1985 complete, except for
Jan, Feb 68, Oct, Dec 71, Sept 76, Mar, Apr, May. July,
Nov, Dec 81. $100 for complete set. (Will not separate}.
Bruce VK3ZHI. Ph:(03) 725 7262.

LINEAR AMPLIFIER: In very good condition. Also
antenna tuner. Lawrie VK4FJC, QTHR. Ph:(070) 65 6207.
POWER SUPPLY: 20A. 12V power supply. AT-250 tuner,
fixed xtal osc for Atlas 110, mobile mount for same. Mobile
mount for TS-430. Jim. Ph:(075) 34 3239 AH.

WANTED — W A
TRI-BAND YAGI: TH3JR or similar. Also suitable rotator.
All letters answered. Cyril VK60E, QTHR. Ph:(09) 277
0349 BH.
YAESU FT-902: DM HF or any Yaesu/Kenwood HF tcvr
with WARC bands. Reasonable price please. Ken
VK6ZA, QTHR. Ph:398 7829.

FOR SALE — A C T
KW-2000: KW Electronics (UK) HF tcvr, 1.8-30 MHz. 6146
output. Rx OK. Tx needs overhaul. Handbook, circuit,
some spare tubes. In condition as found. $150 ONO.
Offers by mail or further details. Frank VK1XE, QTHR.
TOKYO HI-POWER 2m GaAsFET LINEAR AMPLIFIER
HL62V. Produces 40W from 2.5W input (FT-290) or 60W
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YAESU FRDX-400: Amateur band rx, 160-10m plus 6 &
2m. CW1, 2, USB/LS8, AM narrow, AM wide, notch filter,
noise blanker, 100 kHz/25 kHz calibrator, external VFO
output for transceive, clarifier, etc. Excellent condition
except for faulty LSB xtal. $150. VK3BFG, QTHR. Ph:(03)
221 2776.

BENDIX COMPAS RX: R-101A/ARN-6 with control box &
circuit diagram. C-42 FM TxRc 36-60 MHz. PSU harness,
mic. Mn-26 Compas rx chassis, no box. 2 control boxes.
Ph:(052) 481410 AH.
FORESTPHONE: on 1.B25 MHz. $45. Pye Overland on
6m FM net (6 ch). $50. AWA 25m (SS) on 6m FM with
simplex & repeater ch. $90. Dick Smith Commander 2m
FM assembled & going. $180. Pye Overland on 2m FM
repeater 2 (ideal shack monitor rx). $45. Pye Overland on
old 6m AM net, 53.032 MHz. $45. All ONO. Ian VK3AYK,
QTHR. Ph:{03) 523 9405.
ICOM IC-SS1:6m tcvr, pass band tuning plus 6/40 amplifier with power supply. Original condition complete with
packaging & manual. $480. Rod VK3DQJ, QTHR. (054)
261909.
TOWER: free-standing commercial 42 feet in 3 sections.
Lower section steel, upper sections special light-weight
high tensile alloy. Will take large beams with nigh wind
loading. Ex Bass Strait oil rig. Can be inspected with TH7
beam operating. Easy to erect. Will dismantle. Delivery
could be arranged anywhere in Vic by negotiation. $600.
Barry Wilton VK3XV. Ph:(03) 697 4478 BH or (03) 527
4029 AH.

FOR SALE — Q L D
Icom IC-290 144-148 MHz all-mode. POA. Yaesu 144-148
MHz FM scanning tcvr with scanning mlc. $300. Three
VHF SRA hand-hekls, have crystals tor 2 channels for 2

available. $180. Andy

VK4KX.

KENWOOD TS-520S: 6 band HF tcvr. Can be fitted with 1
WARC band. Brand new in box. Only $700 ONO.
VK4JHM. Ph:(070) 91 3219.
RTTY PC BOARDS: also drilled & assembled & tested for
modulators, demodulators, monitorscopes. XR high
speed cassette interfaces. Contact the Secretary,
SEQTG, PO Box 184, Fortitude Valley, Qld. 4006.
WIRELESS STATION TXER C11: plus DC 24V & AC
power supplies, connecting cables, junction boxes,
headsets & other accessories. Was in good working
condition when last used. (Military surplus item). Rhode &
Scharurz WIP BN440 freq meter & sig generator. Freq
range 50 kHz-30 MHz. Made In Germany. Is in good
working condition. (Military surplus, is a good collectors
item). For further details contact Graeme VK4KSD, 28
Bromar Street, The Gap, Qld. 4061. Ph:(07) 3001966.
scan, 10 memory channels, etc. Very compact unit. Ideal
for mobile. VGC. $300. Will pay freight. VK4BZB. Ph:(07)
345 8731 AH.

FOR SALE — T A S
KENWOOD TR-8400:70 cm mobile tcvr. As new & priced
to sell at $200. Keven VK7KV, QTHR. Ph:(002) 43 8972.

STOLEN EQUIPMENT

T h e following equipment has been reported stolen
at the Earlwood Police Station, by D B Watts
VK2DBB.
Yaesu YM-38, Dynamic Microphone;
Yaesu
FT-757GX, Solid State Transceiver, Serial Number
3N040371, (call sign or name etched under one
handle); and Yaesu FC-707, Antenna Tuner, Serial
Number 11140775.
Any m e m b e r w i t h any knowledge of this
equipment should contact their local police station
or the V K 2 Divisional Office.

Advertise/Is
Index
ANDREWS COMMUNICATIONS SYSTEMS
AUSTRALIAN ELECTRONICS MONTHLY
DICK SMITH ELECTRONICS
EASTC0M
ELECTRONIC BROKERS AUSTRALASIA
ELECTRONICS TODAY INTERNATIONAL
EMTRONICS
GFS ELECTRONIC IMPORTS
IAN J TRUSCOTT'S ELECTRONIC WORLD
ICOM AUSTRALIA PTY LTD
TRIO-KENWOOD (AUSTRALIA) PTY LTD
WECAM
WIA (NSW DIVISION) NOVICE LICENCE
WILLIAM WILLIS & CO PTY LTD

11
IFC
IBC
4
45
4&7
2
37
43
BC
32 & 33
10
45
7


TUNE INTO VALUE!

Enjoy 2m and 70cm in one compact unit!

Cat D-3515

Amateur value that's hard to beat! Enjoy the best of both worlds (2m and 70cm) without the expense or space problems of two transceivers. Yaesu's FT-2700RH combines both bands in one unit with an impressive array of features. There's programmable scanning, 10 channel memory scan and priority too! Dual independent front ends, local synthesizer, full duplex crossbanding and much more!

$1095

Performance 2m Mobile Action!

Now more than ever you can enjoy the open road of 2m traffic with Yaesu's FT-2700RH. This feature packed compact is designed with two microprocessors for supercharged action. 10 Memories give you the channels you want at the touch of a button. Advanced scanning facilities let you tour through the band with ease. And dual VFOs let you handle the 2m pile up and win through every time.

$879

NC-15 Quick Charger

Cradle-type charger/supply powers up FNB-3 or FNB-4 NiCads in no time, just around 3-4 hours... that's all! Features auto charge sensing. Can handle the 2m pile up and win through every time.

$165

HF Mobile Antennas

Superb range of loaded whips from Mobile One - the Australian manufacturer that knows what you want! All feature adjustable tuning (no cutting required!) with heavy duty stainless steel stub, mobile mounting base, RG58C/U coax and PL259 connector. 80 Metre, Cat D-4307 40 Metre, Cat D-4308 20 Metre, Cat D-4309

$59.95 each

PTT Switch

Perfect match for our YH-1 headset (C-1955) for better communication - especially mobile! Two-way switch with locking twist one way. PTT other. With LED indicator, 7 pin mic socket. Cat D-3512

$45.95

Yaesu Scan Mic

Excellent value! And so convenient too. Hand held mic suits all Yaesu transceivers with scanning facilities. Just plug in (standard 8 pin plug) and you're on the way to easy scanning operation. Perfect for mobile use. 500 ohm impedance.

$51.50

Mobile 757 Bracket

Mount your FT-757 transceiver securely... three angle positions available, place unit in suspended or slung position. Secure either under dash or on transmission tunnel.

$56

Economy 70cm Hand Held

Yaesu FT-703R -- a superb little transceiver with all the most wanted features -- without the expensive frills! Covers 430-440MHz with simple thumb wheel setting. There's squelch and volume controls, repeater offset switch and high/low power control. But if it's not enough: • VOX (with optional YH-1 headset) • Wide operating voltages: 5.3-13.5V • 2.5W power output (10.8V FNB-3 battery included).

$535

Maldol Duplexers Save Up To $10!

What a bargain! Maldol duplexers add versatility to communications: single transmission lines are so much more convenient!

2-6m, 50/144MHz $95 Was $105
2m - 70cm $95 Was $105

$52.95 $49.50

SAVE $10! SAVE $7!

Mobile FT-703R -- packs a load of features and performance in a compact, hand held unit! It's not weighed down with expensive extras... just the most wanted features to enjoy UHF. • 10 Memories • 5 scanning modes: selective, priority, band, skip and busy or clear - Choice of Hi or Lo (optional) battery pack. FNB-3 (10.8V, 425mAh) or FNB-4 (12.5V, 500mAh) batteries. Battery not inc.

$499

Cat D-3517

SAVE $40!

Cat D-3508

SAVE $10! SAVE $7!

Cat D-3509

SAVE $10! SAVE $7!

Cat D-3513

SAVE $10! SAVE $7!

Cat D-3505

SAVE $10! SAVE $7!

Cat D-3504

SAVE $10! SAVE $7!
Introducing a Professional Scanning Receiver at an Affordable Price. 25-1000 MHz Plus! Frequency coverage (no additional module required for coverage to approx. 2.0 GHz.)

ICOM announce a scanning receiver that offers professional performance with IC-R7000 advanced technology - 25-1000 MHz coverage, multi-mode operation and a sophisticated scanning and recall system. IC-R7000 covers aircraft, marine, business, FM/AM broadcast, amateur radio, emergency services, government and television bands.

ICOM IC-R7000 has many outstanding features.

- **99 MEMORIES**: You can store up to 99 of your favourite frequencies for instant recall. Memory channels can be called up by simply pressing the memory channel knob or direct through the keyboard.

- **KEYBOARD**: Tuning can be quickly achieved by selecting precise frequencies directly through the IC-R7000 keyboard or by turning the main tuning knob.

- **SCANNING**: Instant access is provided to commonly used frequencies through the scanning system. The Auto-M switch enables signal frequencies to be memorized while the IC-R7000 is in the scanning mode. Frequencies that were in use can be recalled at the operator's convenience. An optional voice synthesizer automatically announces the scanned signal frequency to ease problems with logging.

- **MULTI MODE**: Push button selection enables FM wide/FM narrow/AM/SSB upper and lower modes to be received.

- **6 TUNING SPEEDS**: 0.1, 1.0, 5, 10, 12.5 and 25 kHz through knob selection.

- **ADVANCED TECHNOLOGY CONSTRUCTION**: The IC-R7000 has dual colour fluorescent display with memory channel readout and dimmer switch. Dial lock, noise blanker, combined S-meter and centre meter. Optional RC-12 infra red remote control operation. All the above professional features are produced in a convenient, compact unit of size:
  - Height 282 mm
  - Width 286 mm
  - Depth 276 mm

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  - Height 282 mm
  - Width 286 mm
  - Depth 276 mm

Specifications guaranteed from 25-1000 MHz and 1260-1300 MHz.

No additional module is required for coverage to approximately 2000 MHz. No coverage is available from 1000-1025 MHz.

Please send me details on:  
☐ IC-R7000  ☐ ICOM's full range of communications equipment.

Senders details:

NAME  
ADDRESS  
POSTCODE  

PHONE:  
POST TO: ICOM, 7 DUKE STREET, WINDSOR, VICTORIA. 3181. PH: (03) 5297582.

This equipment is not covered by our parts and labour warranty.
ST JUPAT arrives in Sydney
VK/ZL/OCEANIA CONTEST
— 1985 results; 1986 rules
Novel Way to Learn MORSE
FIELD DAYS can be fun
Don’t miss August!

IONOSPHERIC DISTURBANCES EXPLAINED

Build a ‘modem coupler’ and get your Commodore 64 or 128 ‘on-line’

$3.30 AT YOUR NEWSAGENT

or favourite electronics retailer

ANNOUNCEMENT

Shortly, we will be making major changes to Australian Electronics Monthly.

In the past, electronics magazines in Australia have promised ‘bigger/brighter/better’ things to come, but have never quite matched the performance with the promise.

But not us.

For starters, we are going to significantly expand our project content — like double, would you believe?

Interested? Like to find out more?

STAY TUNED. SAME TIME, THIS MAGAZINE, NEXT MONTH
Jenny VK5ANW, has created many firsts for YLs in South Australia during the short time she has been an amateur, see page 3.

Photograph courtesy Peter Koen.

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DEADLINE

All copy for inclusion in the October 1986 issue of Amateur Radio, including regular columns and Hamnews, must arrive at PO Box 300, Caulfield South, Vic. 3162 at the latest, by 9am, 21st August 1986.

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AMATEUR RADIO, August 1986 - Page 1
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Yaesu's compact and lightweight transceiver for the amateur who doesn't need all the frills: the brilliant FT-203. Thumbwheel frequency switching makes for quick and easy channel selection — so no memories are required. But the FT-203 still packs a handy 2.5W output: more than enough for average simplex and repeater (inbuilt +/-600kHz repeater split) usage. And for mobile use gives you the channels you want at the touch of a button. Advanced search scanning facilities let you tour through the band with ease. And dual VFO's let you handle odd repeater splits. For mobile use the FT-203 has a no-hands VOX system when used with the optional YH-2 headset.

Features: • Double conversion superhet • 5W input for 2.5W output (F3) • Tiny size — 65 x 34 x 153mm • 144-148MHz frequency range • 450mAh battery included • 20dB sensitivity

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Features: • LCD display — with backlight • Unique die-cast, duct-flow heatsink • Compact — just 140x162x40mm • High/low power output 25W/5W.

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Maldol Duplexers
What a bargain! Maldol duplexers add versatility to communications: Single transmission lines are so much more convenient!

Features: • 450mA battery included • 444kHz frequency range • 5W input for 2.5W output (F3) • Tiny size — 65 x 34 x 153mm • 144-148MHz frequency range • 450mAh battery included • 20dB sensitivity
JENNIFER (Jenny) WARRINGTON VK5ANW

Jenny first became interested in amateur radio in 1973, when her OM, Mike attended AOC classes and subsequently sat for and passed his limited licence in December 1974. Twelve months later he brought home a brand-new Weston 551 two-metre rig, and rashly stated that it was her Christmas present, so it was decided that perhaps she had better get her licence to go with it!

With the help of Instructors, David VK5HP and Murray VK5CG, she finally became licenced in December 1977, with the call sign of VK5BZI. This was the call sign that Mike had held since 1974, but in October 1977, he had obtained his full call of VK5AMW and the Department of Communications approved the change-over of the "ZBI" call sign.

Sometime in the first half of 1975, Myrna VK5YW had introduced Jenny to a magazine produced by LARA (later known as ALARA, the Australian Ladies Amateur Radio Association). Jenny became a member, and at a later date became the State Representative for VK5, a position she has held until 1983, when she became Secretary.

Around March/April 1979, Jenny was asked if she would organise the Supper, at very short notice, for the next meeting of the WIA. She was still doing this "temporary fill-in" 12 months later!

She obtained her full call in April 1980, and became VK5ANW (quickly dubbed, Australia's Nicest Woman). Having been asked if she would nominate for Council, she became the first YL to be elected to the VK5 Divisional Council (also April 1980), and served the first YL on Federal Council, Country Members Representative (also still Supper Organiser).

In April 1981, she became the Minutes Secretary and attended the Federal Convention as Observer, with the idea that she would possibly become Federal Councillor two years hence. However, things did not go as planned and in July 1981, she became the first YL on Federal Council, as Councillor to the VK5 Division. She was still Federal Councillor and Minutes Secretary from April 1982 to 1983, and from 1983 to 1984 was Federal Councillor and Vice-President.

She also became Temporary Five-Eighth Wave Editor for one month in the early 80s and is still providing excellent notes of the Divisions news each month.

In April 1984, she became Secretary and Vice-President, and held both positions until April 1986, when she became the first YL to be elected President to the VK5 Division (and second in the 75 years of the WIA's history, the first being Susan Brown VK2BSB, former President of the VK2 Division).

Ask Jenny to comment on these events, and she says, "Well, I didn't set out to do any of these things, and in the beginning I was very reticent to become the first YL in these male dominated areas. I remember telling Ian Hunt VK5GQX, the then President of the VK5 Division, who asked me to nominate for Council, that I didn't want to be 'just a mascot'. If I joined Council I wanted to 'pull my weight' but I was very aware of my limitations, particularly in technical areas, also, as I was breaking new ground, I was not sure of my reception by the OMs. I need not have worried, both at the Divisional and Federal levels they could not have been kinder or more considerate. And, apparently my presence did not inhibit them to any great extent. They didn't stop telling risque jokes, they merely apologised beforehand and then went on as if nothing had happened."

"I would like to think that seeing YLS such as myself, in prominent positions, will encourage other YLS to join the hobby and to take active roles themselves. We now have, or have had, YLS on the VK2, 4, 5, and 6 Divisional Councils, and Brenda Edmonds VK3KT, as Federal Education Co-ordinator. There are also many more YLS working for the good of amateur radio less conspicuously, but no less important positions. I hope that this trend will continue. We are never likely to 'take over' nor would we want to, but we all have talents to contribute and I think all those OMs who had enough faith in me, to let me contribute mine."


**

Peter Koen, Secretary of VK5BPA, and John O'Dea VK5KOR, of Victor Harbour, at Government House, SA, on May 4, 1986 when both received Medals of Merit for service to Scouting from the South Australian Governor, Sir Donald Dunstan.

Photos courtesy of Peter Koen, Secretary, VK5BPA

Peter Koen, Secretary of VK5BPA, and John O'Dea VK5KOR, of Victor Harbour, at Government House, SA, on May 4, 1986 when both received Medals of Merit for service to Scouting from the South Australian Governor, Sir Donald Dunstan.
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Nandor Fa, a 32-year-old ship-builder and 30-years-old Jozsef (Joe) Gal, a mechanical engineer, left the north eastern shores of the Adriatic Sea on September 26, 1985 after they had been preparing for the round-the-world trip for five years. It was quite a unique task, as Hungary is a land-locked country in central Europe, and besides the Danube which crosses the country from north to south, the only navigable waterway is an inland lake, the Lake Balaton which is about 80 km long and 16 km wide at some parts. With its 585 km², Lake Balaton is the largest lake in central Europe.

The boat, called 'Saint Jupat' was named after the Hungarian patron saint of the sailing boats and kayak enthusiasts. The hull of the boat was built by the Ganz Danubius Ship Building Company, commemorating the 150th Anniversary of the Hungarian shipping industry. Nandi and Jozsef were then set the task of equipping and fitting-out the boat to their design and requirements. Out of the two would-be sailors, only Nandi had some prior sailing experience.

Once the boat was fitted out it was taken by the two adventurers on a "Shake-Down" 3200 km trip around the Adriatic Sea. Some modifications and internal re-arrangements followed this cruise. Seeing that their dream is coming to fulfillment, the two sailors started to receive some assistance from the Hungarian public and authorities, who had previously been very sceptical about the success of the venture.

In the March 1986 issue of Amateur Radio there was a report about two young Hungarian sportsmen who took on the mighty oceans is a 30 feet (9m) long, nine feet (2.5m) wide, four ton (4 tonnes) sailing boat. It is with some relief to their families and for those who followed their path, that on May 20, 1986 they sailed into Sydney Harbour in good health with a boat that shows the ravages of the sea.

The village, which is the only settlement on Tristan da Cunha (ZD9), when the St Jupat arrived during their sail-boat world trip.
happy message, which was relayed to them, that Jozsef had become a father. His wife in Hungary had given birth to a healthy 3500 grams, 45 centimetre son. The two weary sailors opened a bottle of riezling wine, bought for this anticipated occasion in Cape Town, and drank a toast to the health of the newborn. (It was moving to listen to their happy voices over the crackle of the static on SSB).

By May 17, they were 36 degrees, five minutes Latitude, and travelling at an average speed of five knots per hour. That same night, the first contact was made with them on 3.630 MHz. In the meantime, the Sydney Hungarian Community swung into action to prepare a berth were secured for the boat. An ad-hoc welcoming committee The Friends of St Jupat was formed.

The anticipated day of arrival was May 20, but ironically the boat made such good speed in the last days before arrival, that it arrived 20 hours early. Consequently, they had to anchor off Bondi Beach for the night as the welcoming schedule could not be altered.

On board St Jupat, after customs clearance, leaves Watsons Bay, in Sydney Harbour. Photograph courtesy Royal Australian Navy

Sydney Harbour was at its best on Tuesday, May 20. Bright sunshine greeted the intrepid sailors and their boat as they motored up Sydney Harbour under the guidance of the local sailing boat Shenandoah III, skippered by Julius Charody, a member of the CYA at Rushcutters Bay.

The wharf was crowded with media personnel, including some helicopter crews from television stations, and hundreds of members of the Hungarian community who greeted their heroes in the traditional Hungarian way — freshly baked bread, salt, wine and the sounds of Hungarian folk-music and tapping of the "Kodaly" local Hungarian dance company. Officials of the Sydney Hungarian Consulate were also present.

Welcome were bestowed on the sailors by Julius Charody, on behalf of the yachting fraternity, Mike Petery, on behalf of the Australian Navy and amateur radio operators.

Welcome on "dry" land. From left: Mike Petery, Nandor, Mike Mercz, with violin, Jozsef, and Peter VK2OG. Photograph courtesy Royal Australian Navy

Nandor and Jozsef anticipate staying in Sydney for a number of months so they may carry out necessary repairs and maintenance to their boat before they sail for New Zealand.

Around Christmas time, another dangerous part of their journey will begin when they head eastwards along the 50th southern latitude towards South America, rounding Cape Horn and landing in Buenos Aires. They then plan to sail into the Caribbean, following the eastern South American coastline, then across the Atlantic Ocean towards the east of Brazil.

Nandor and Jozsef, when asked why they were undertaking such a voyage, said: "We really do not know. Ever since we read Sir Francis Chichester's book about his solo sailing around the world, we knew we had to follow his example. No Hungarians before us, ever sailed the seas in a small boat like ours, and ours is the first Hungarian sailing boat ever to visit Australia."
EARLY RAAF TRANSMITTERS — The Type AT1

The 500 watt RAAF Type AT1 transmitters were designed and manufactured by RAAF Signals Staff at the RAAF Station, Laverton for several years from about 1929.

Apart from valves, transformers, and meters, they were completely built by workshop personnel, including condensers, (sorry capacitors), coils, base-boards, etc.

The transmitter comprised of two polished wooden base-boards; one for the RF section and the other for the rectifier unit. A third unit was a keying and switching relay unit using two workshop manufactured brass PFG type sounder relays. One relay was the keying relay and the other switched the primary 240 volt circuit to the HT and filament transformer. This was switched on by the bottom pinch of the key and switched off by changing the polarity of the keying voltage. Another tap on the key opened the switching relay and switched the transmitter off. (Many were the times I was zapped while adjusting the two relays with one hand on each of the gap and tension adjusting screws simultaneously).

The rectifier unit consisted of two Valve Type VU7s as a full wave rectifier. The then current RAAF nomenclature for valves was:

- VT — Valve Transmitting; VR — Valve Receiving; and VU — Valve Unidirectional for rectifiers.

These VU7s were called “football” valves pertaining to their shape. They had no base and connections were made via a flying lead out of the top pinch of the valve for the anode. Similarly, a pair of flying leads were brought out of the bottom pinch for the filament of the valve. There was definitely no need for valve connection diagrams!

These flying leads were duly connected to screw terminals. The HT voltage from the transformer was some 3 kV and the transformer, filter condenser and choke were mounted outboard of the rectifier unit. The rectifier filaments were quick heating “bright emitter” types.

Because of this quick heating factor, the whole transmitter could be switched on remotely and ready for almost instantaneous use. This was the shortcoming of the design and it was very effective but required periodic attention to spring tension and gap adjustment of the oscillator type switching relays.

The RF section was a push-pull Tuned Anode Oscillator which was inductively coupled through series tuning condensers to a parallel tank tuned circuit. The frequency range was approximately from 2.5 to 15 Mc/s, or in modern terms MHz. This coverage was achieved by a series of plug-in coils consisting of three each for grid (L1), anode (L2) and aerial (L3).

The oscillator valves (in fact, the only RF valves) were VT30s and sometimes VT4s. These valves were above the flying-lead types with the grid lead out of the bottom pinch on the VT30 and a screw terminal on the side of the VT4 for the grid.

Although archaic by modern standards, these transmitters gave a reliable performance carrying long distance point-to-point services throughout Australia and New Guinea, up to and after the outbreak of war in 1939. They were also used as the international transmission service until superseded and also carried the bulk of HF ground-air watches until they were eventually superseded in this service also. I believe a couple of the Darwin AT1s had a new lease of life at Batchelor, Northern Territory, for some time, but that was their last dying gasp, at least in the Northern Territory.

By today’s standards, one would seriously question the drift and frequency stability of a transmitter which was keyed immediately at switch-on; sometimes for periods of 10 or 15 minutes non-stop in traffic. With such a relatively unstable arrangement of a self-excited oscillator direct into the aerial from a cold start, the resultant drift must have been astonishing.

However, the state-of-the-art receivers were very forgiving as their selectivity was very little better and the receiving operators were able to adjust to these variations quite easily.

When tuning the transmitter (from a tuning chart initially), there were two positions of grid tuning very close together in which the transmitter would oscillate; one much more actively than the other. It was common practice to check this by drawing an arc from the anode coil with a lead-pencil and selecting the broadest arc position for grid tuning. A few hardy (foolhardy?) souls did actually dispense with the lead-pencil and checked the arcs with a saliva covered index finger.

(I know of this as I was one of a number of operators who used this method! If the anodes had not been shunt fed, the first time would probably have been the last, or at least there would have been only one malfunction per operator and the practice would have ceased due to a shortage of operators). I do not condone the practice for anyone, at any time. Death is so permanent.

Aerial coupling was varied by altering the angular relationship between the aerial coil L3, and the anode coil, L2.

In 1940, I was employed for sometime at the old Darwin RAAF temporary transmitting station, near the Parap public school, where several AT1’s were in use at the time. During the dry season the performance of these units was superb, but with the onset of the “wet” the high line surges and spikes on the local mains current, caused severe electrical storms, caused rectifiers to arc over with resultant open circuited filaments.

All stocks of rectifiers were used and it was necessary to substitute oscillator valves by tying the grid and anode together for use as diodes.

The Type AT1 Transmitter. The lower coil is the L1 (grid) coil; the left uppermost coil is the L2 (anode) coil, and the right-hand coil is L3, the aerial coil.

This entailed removing the porcelain beads on the VT30 grid leads and re-covering the grid leads with a rubber EHT insulator made by stripping the conductors out of lengths of EHT cable. This enabled the units and operators to “see the wet” out and the rectifiers were trouble free for the following dry season.

Some of the climatic problems caused by the wet season were odd, to say the least. One morning a swarm of flying ants decided to build their nest on one of the relay units and had shed their wings with a view to taking up permanent residence there. They were brushed into a four-gallon kerosene tin and taken outside. (There were over two full tins of them).

It was a very common experience to find flying bugs of all sizes and shapes plotting a path between the plates of the anode condensers of the transmitters. This was all right until the transmitter was on and keying and then — ZAPPPP! Little bugs made little zaps and were gone but B29 size moths and Praying Mantis frequently bridged two adjacent condenser plates and the noise of their demise was indescribable.

You could read the message being sent by the sound of the arc passing through the insects body. In this case, there was a mad dash and the ubiquitous lead-pencil soon flipped the offending insect away. Meanwhile, at the station signals office a repeat of the mangled (?) piece of text was necessary.

Reptiles visited occasionally but fortunately, very rarely did they cause any electrical problems.

During the dry season of 1940, new supplies of rectifiers were delivered and all looked rosy for the future. But the writing was on the wall for the old veteran AT1 as newer, more modern and sophisticated transmitters began arriving. With their installation the AT1 took a step back into the limbo of obsolete equipment in the RAAF store system after a long and meritorious service life.
INEXPENSIVE DC SUPPLY

Use a common three terminal regulator to float charge a small 12 volt battery.

Suitable high capacity DC supplies for any solid-state rig of reasonable power can be very expensive. An alternative solution to the power supply problem can be found in using a common three terminal regulator to float-charge a small 12 volt battery.

The three terminal regulator based charger operates as a straight charger when the equipment that it powers is not turned on. When the equipment is operating, the charger supplies the equipment standing currents such as the receiver current drain whilst the battery supplies peak loads such as those required during transmit. The charger capacity should therefore be equal to, or greater than, the standing (normally receiver), current drain. If this is not the case, even prolonged receive-only operation will flatten the battery.

I have developed a fully automatic charger which can charge a low cost, 12 volt motor cycle or gel battery. The preferred charging method for lead acid batteries is constant voltage charging where the current drawn by the battery decreases as it approaches full charge. The modern sealed battery is designed so that it is very difficult to damage it by over-charge (so long as the maximum voltage is not exceeded), so the charger may be left permanently connected to the battery, although this has not yet been clarified. Also protected would be any signal "transmitted using modulation techniques whose essential parameters have been withheld from the public with the intention of preserving the privacy of such communications." That includes scrambled and encrypted transmissions, and may include radio-teletype using bit-inversion codes as well.

Scanner owners monitoring the VHF and UHF bands will find there are penalties for tuning in the remote broadcast pickup stations around 153, 151, 450 and 455 MHz; radio common carriers around 152, 158 and 454 MHz (traditional carphones); anything scrambled or encrypted; and any FM sub-carrier service.

Privacy Act
On May 14, The Electronics Communications Act of 1986, bill was approved unanimously by the US House of Representatives Subcommittee.

The Bill proposes a new definition for the interception of radio and electronic communications — "interception of the transmission of the content" — which means that mere reception of a protected communication would be a crime.

A penalty of up to one year in jail, and up to a $10,000 fine, would be imposed for intercepting certain transmissions in the shortwave band — namely, a handful of remote broadcast pickup stations operating around 26 MHz. (Ship-to-Shore radio telephone conversations may be similarly protected, although this has not yet been clarified). Also protected would be any signal "transmitted using modulation techniques whose essential parameters have been withheld from the public with the intention of preserving the privacy of such communications." That includes scrambled and encrypted transmissions, and may include radio-teletype using bit-inversion codes as well.

Scanner owners monitoring the VHF and UHF bands will find there are penalties for tuning in the remote broadcast pickup stations around 153, 151, 450 and 455 MHz; radio common carriers around 152, 158 and 454 MHz (traditional carphones); anything scrambled or encrypted; and any FM sub-carrier service.

Comic book introduces amateur radio
A comic book introducing amateur radio to the 9-15 age group is being published by Archie Comics. One half of the cost of publication is being paid by the amateur radio industry, the other half by the ARRL.

The book will be 32 pages, with 24-26 pages occupying the story, the remainder will be used for an amateur radio crossword puzzle, a quiz based on the facts of the story, a glossary of terms and other fun activities.

Condensed from The ARRL Letter, June 6, 1986.
Introducing a Professional Scanning Receiver at an Affordable Price.

25-1000 MHz Plus!

ICOM announce a scanning receiver that offers professional performance with IC-R7000 advanced technology – 25-1000 MHz coverage, multimode operation and a sophisticated scanning and recall system.

IC-R7000 covers aircraft, marine, business, FM/AM broadcast, amateur radio, emergency services, government and television bands.

ICOM IC-R7000 has many outstanding features:

- **99 MEMORIES:** You can store up to 99 of your favourite frequencies for instant recall. Memory channels can be called up by simply pressing the memory channel knob or direct through the keyboard.

- **KEYBOARD:** Tuning can be quickly achieved by selecting precise frequencies directly through the IC-R7000 keyboard or by turning the main tuning knob.

- **SCANNING:** Instant access is provided to commonly used frequencies through the scanning system. The Auto-M switch enables signal frequencies to be memorized while the IC-R7000 is in the scanning mode. Frequencies that were in use can be recalled at the operator's convenience. An optional voice synthesizer automatically announces the scanned signal frequency to ease problems with logging.

- **MULTI MODE:** Push button selection enables FM wide/FM narrow/AM/SSB upper and lower modes to be received.

- **6 TUNING SPEEDS:** 0.1, 1.0, 5, 10, 12.5 and 25 kHz through knob selection.

- **ADVANCED TECHNOLOGY CONSTRUCTION:** The IC-R7000 has dual colour fluorescent display with memory channel readout and dimmer switch. Dial lock, noise blanker, combined S-meter and centre meter. Optional RC-12 Infra red remote control operation. All the above professional features are produced in a convenient, compact unit of size:
  - Height 282 mm
  - Width 286 mm
  - Depth 276 mm

Specifications guaranteed from 25-1000 MHz and 1260-1300 MHz. No additional module is required for coverage to approximately 2000 MHz. No coverage is available from 1000-1025 MHz.

Please send me details on:

- [ ] IC-R7000
- [ ] ICOM's full range of communications equipment.

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All stated specifications are approximate and subject to change without notice or obligation.

ICOM customers should be aware of equipment not purchased at Authorized ICOM Australia Agents.

This equipment is not covered by your parts and labour warranty.
Antennas are undoubtedly an interesting area for experimentation in amateur radio. Here we have a theoretical look at different antennas.

Antennas have always been one of the most interesting areas for experimentation in amateur radio. Few amateurs however, use a theoretical approach instead of using the "let's build it and see" approach. Whilst this approach is equally valid, it does take quite some time and there is no guarantee that it will produce results. In fact, since the wide dissemination of the NBS Yagi designs, most construction has been simply the scaling of these designs to new frequencies. The prevailing feeling seems to be that — all the work on antennas has been done, so it's no use doing any more, or even if there are new forms to try you require a PhD to work them out.

This series of articles is an attempt to change this outlook, and show that there is still plenty of room yet for valuable contributions to be made by amateurs. To do this, a basic computer program will be developed which will be capable of running on most home computers. Further, the underlying Equations, etc on which this program is based will also be given.

The features of this program are:

- Directive Gain Figures
- Pattern Plots
- Input Impedances
- Element Currents
- Front to Back Ratio

It will provide these for any two dimensional array of dipoles, with any or all elements driven. As such, it is usable on ordinary Yagis; Stacked Yagis; Driven Arrays and a large number of other configurations which do not have names.

It must however always be kept in mind that the program uses a theoretical approach and as such gives theoretical answers. The real world is much more complex than the simple models that will be presented here and as such, output for this program should be treated with care. Further comments on its accuracy and application will be given later.

THE CO-ORDINATE SYSTEM

Before going into the depths of how to accomplish the above, a few basics must be established. For most of these is the co-ordinate system, ie how we can mathematically describe where our elements are in space.

The system to be used here is shown in Figure one. As can be seen there is an X, Y and Z: axis giving full three-dimensional coverage. It is rare, however, that this is the axis used in calculations. Quite a deal of simplification can be made if the other axis shown are used, ie the Theta, Phi and R. This system may be new to many amateurs, but a little thought should have most happy with its use. As an example, an element is shown with its centre at X=1, Y=1, Z=1, this element could also be seen to be at Theta=45 degrees, Phi=45 degrees, and R=1. It is usual to have the major lobe, or direction of greatest gain at Theta=0 degrees or directly along the Z axis.

![Figure 1 — Co-ordinate system for antenna analysis.](image)

**COMPLEX NUMBERS**

All amateurs should be aware of the terms resistance, reactance and impedance. They may not, however, be used to thinking of them in terms of complex numbers. For the sake of usage here, a complex number can be simply thought of as one composed of two other ordinary numbers, the real and the imaginary part.

In the impedance case, impedance is really a complex number formed of the real, or resistive part and the imaginary, or reactive part. No further knowledge of complex numbers will be needed to operate the program or to basically understand the rest of the explanations which follow. However, it will be necessary to recognise complex numbers when they come up and realise that the common mathematics which applies to real numbers may not apply to complex numbers. Throughout the following complex numbers will be represented by one or the other of two possible forms:

1. \( F(\theta,\phi) = K \times \cos(90 \times \cos(\theta) \times \cos(\phi)) \)
2. \( W(\theta) = K \times 20 \times \log_{10}(F(\theta)) \)

Form 1 — Real + J Imaginary; eg 10 + J5
Form 2 — Magnitude < Angle; eg 11.18 < 26.57 degrees.

The relationship between these forms is shown in Figure 2. Both represent the same complex number but the different forms are more suitable in some circumstances than others so both will be used here at different times.

The quantities that will be expressed here as complex are, impedance, current and voltage.

**ELEMENT RADIATION PATTERNS**

Most amateurs have been exposed to the concept of a pattern of a dipole antenna as shown in Figure 3. But few really know what this means or can represent this mathematically. Conventional amateur literature often only gives the pattern in two planes, the so-called E and H plane, ignoring all the area between. For our purposes, the E plane is the one that is parallel to the dipole element and the H plane is the one perpendicular to the element.

Patterns can be represented in a number of ways, the two most common are linear proportional to the radiated field strength in Volts/Metre at some arbitrary distance, or logarithmically proportional to the radiated power in Watts/Metre squared.

For a simple half-wave dipole in free space, formulas often given for E and H plane patterns are Equations 1a and 1b for the E plane and 2a and 2b for the H plane. In both cases the dipole is in our co-ordinated system situated at X,Y,Z = 0 in line with the Z axis.

1a. \( F(\theta) = K \times \cos(90 \times \cos(\theta)) / \sin(\theta) \)
2a. \( F(\phi) = K \times 20 \times \log_{10}(F(\theta)) \)

However, these Equations are not sufficient for our purposes here, to find the true directive gain later it is necessary to have an expression in terms of both Theta and Phi. This more complex Equation is given in Equation 3a and b:

3a. \( F(\theta,\phi) = K \times \cos(90 \times \cos(\theta) \times \cos(\phi)) / \sqrt{1 - \sin(T) \times \cos(\phi)^2} \)
3b. \( W(\theta,\phi) = K \times 20 \times \log_{10}(F(\theta,\phi)) \)

At theta equals 90 degrees Equation 3a reduces to Equation 2a. At Phi equals zero Equation 3a reduces to Equation 1a.

It will be this pattern which will be assumed for all later calculations.

![Figure 2 — Relationship between polar and rectangular complex number.](image)

![Figure 3 — Typical E plane half-wave dipole pattern.](image)
ARRAYS

Figure 4 shows a basic one dimensional array composed of two elements, one and two. In this case, for simplicity, isotropic radiators will be used, ie each element radiates equally well in all directions. If we imagine that we wish to determine the relative field intensity at some distant point P which is so far away that Theta 1 is approximately equal to Theta 2. Then the field in this direction can be expressed in terms of the complex element currents and phase differences, and the spacing of the elements. In general for this situation Equation 4 gives the field expression for this array.

For more than two elements we get Equation 5, which is just the sum of a number of Equation 4s from element 1 to N.

4. \( F(\theta) = K*\left[ I_1 < A_1 + I_2 < A_2 + (2*\pi/\lambda)* S* \cos(\theta) \right] \)
5. \( F(\theta) = K* \left[ \sum_{n=1}^{N} I_n < (A_n + (2*\pi/\lambda)* S_n* \cos(\theta)) \right] \)

This Equation can be extended to apply to Figure 5, where a two dimensional array is used giving Equation 6.

6. \( F(\theta) = K* \left[ \sum_{n=1}^{N} I_n < (A_n + (2*\pi/\lambda)* S_n* \cos(\theta) \right] \)

Once again this only gives the array pattern in the Theta plane and we require both Theta and Phi variations. It can be shown that in this case for the two dimensional array in Figure 5, the field pattern is given by Equation 7.

7. \( F(\phi,\theta) = K* \left[ \sum_{n=1}^{N} I_n < (A_n + (2*\pi/\lambda)* S_n* \cos(\theta)) \right] \)

Further, if the array is composed of other than isotropic elements then the principle of pattern multiplication states that the total pattern can be found by multiplying the Element Pattern by the Array Pattern for isotropic elements which has the special name of the Array Factor. So the total pattern can be found by multiplying Equation 3a by Equation 7.

This Equation can then be evaluated using numerical integration techniques to provide a value of directive gain for any arbitrary two dimensional array.

If we assume that our antenna array system has no losses then the Directive Gain can be equated to the gain figure usually given for arrays by Equation 10, where the dBi specifies that this is gain over an isotropic radiator.

10. Gain dBi = 10*log(D)

ELEMENT CURRENTS

So we now have enough information to determine patterns and gains of an arbitrary array, but only if we know the complex element currents. A number of programs have appeared in amateur literature to give patterns etc, but all assume that we know these currents. In fact, it is not as simple as that, or else Yagi-type antennas would never work. In real life antenna elements do not act in isolation. Currents in one element set up currents in other elements via mutual effects. (For further information see Reference 2). To truly calculate patterns, etc this effect must be allowed for. One way of doing this is described in Reference 3.

In summary, this method uses matrix methods to solve the complex multi-element form of Equation 11.

11. \([Z][I] = [V]\)

This then can be solved for I, but only if we know V and Z. Luckily enough, we can, in most cases, determine V and a number of methods have been proposed to calculate Z (see References 1, 2, 3, 4 and 5). The method chosen here is the so called "integral equation approach and is explained best in References 1 and 5.

CONCLUSION

In the next part we will take the above information and show how it can be implemented in terms of a basic computer program.

References:

EQUATION KEY

F is the Field Strength in Volts/Metre.
\( \theta \) is the angle Theta as shown in the Figures.
K is a constant expression which does not effect the final outcome of this program.
W is the Field Strength (Power Density) in Watts/Metre^2.
\( \phi \) is the angle Phi as shown in the Figures.
I_n is the Magnitude of the current in the nth element as shown in the diagram.
A_n is the Phase or Angle of the current in the nth element as shown in the diagram.
A_0 is the Wave-length in Metres.
S_n is the Spacing in Metres between the reference element and the nth element.
B_\theta is the Spacing in Degrees from the reference plane and the nth element, as shown in the diagram.
\( \delta \) is similar to W but not necessarily in dB.
\( \delta \) is the double surface integral.
[1] [2] [3] [4] [5] are the complex matrix values of Impedance, Current and Voltage respectively.
Field Days
Can Be Fun

... and frustrating tool Reflections on preparation and operating in the 1986 John Moyle Memorial National Field Day, with data on some effective antennas for portable use.

Nostalgic reminiscences of some earlier field days recall an era when portable meant anything with two handles which could be manhandled on to a Field Day site.

It all began when my son-in-law David VK5ADO, watched me delving into his Swan 240 to coax the receiver section back to life.

David was checking on up-coming contest dates and suggested the John Moyle event ... after all, field days are fun for all.

I held a different view based on memories of two earlier field days in 1950 and 1954.

SOME NOSTALGIA

The VK5 Northern Net organised a field day at Kupara on October 29, 1950. As I was a Net Controller for that group, this would be an ideal way to meet with the voices on the other side of the microphone. An ex-disposals 108 was modified for the occasion. Three quartets of a watt into a random wire should work someone! (It proved to be plenty of power to win a prize (pair of 807s) for the best DX on the day).

Early arrival at the venue cornered the best antenna supports in the form of two basket-ball goal-posts. As the other stations arrived, car mounted whipz and ex-Army tank whips swung up around us. Ken VK5AL, found a tree stump at the opposite Ausit of the oval; to support a vertical. As I am approached, we awaited the WIA Sunday Morning Broadcast from Adelaide, by Reg VK5RR. The 40 metre band was dead. Max VK5OB, was complaining of similar conditions on six metres.

After an hour of deadly silence, Brian VK5CO, remarked that he had heard on 20 metres the previous night high sun spot disturbance was expected for a couple of days. Les VK5UX, the organiser of the whole day, told the group the bad news but hoped we would still make it an enjoyable day.

VK5AL strode off across the oval, called me for a 5 x 9 signal both ways in our logs to win the DX Trophy before looking up to join in the cricket match. Brian VK5WO, won a prize for receiving 28 WPM and Clarrie VK5KL, won a prize for a smart home-brew six metre converter.

As a field day, it was an sun-spot washout. As a sports event, it was rated as a roaring success as so many had the opportunity to meet the regular check-ins on the Northern Net. It also provided some early mail for my column as VK5AJ, Amateur Radio Editor of the then A.G. Hult's Australian Radio World, for December 1950, which was its last issue. The following month there was a change of publisher and title to Australian Radio News.

The VK5 Division organised Sunday, January 28, to stimulate interest in the WIA National Field Day. There had been little support for these events since activities resumed after WWII and this was calculated to encourage more portable operation.

The site chosen was a long stretch of beach at Taperoo. The area is now the North Haven multi-million dollar housing development and boating marina. In 1951 there wasn’t a pole or tree in sight. High sun spot disturbance was expected for the occasion. Three quarters of a watt into the microphone. An ex-disposals 108 was modified for the occasion. Three quartets of a watt into a random wire should work someone! (It proved to be plenty of power to win a prize (pair of 807s) for the best DX on the day).

Arrangements were made to visit the farm about a mean bull which did not cause any concern then, but I would have good reason to remember later while erecting an antenna.

John Hampel VK5SJ

15 Mitchell Street, Glengowrie, SA. 5044
I had brought a multi-meter to test ground conductivity. This soon revealed that the fence was a continuous loop back to a cut made as a test point opposite the shed. Earlier success with a 7 MHz loop only 70 cm above ground at the home QTH fired the imagination. This one was at least 1200 metres (later checked closer to 1800 metres) and about 150 cm high. It would be fired up on 3.5 MHz for the field day.

Driving home we assessed what was available. David would now use his trusty Swan, plus homebrew transverter for 21 and 28 MHz with a common feed coaxial cable to simple dipoles. The problem would be finding enough three-core cable to use with the generators.

**PREPARATION**

Over the next three days of scrounging, we had amassed a motley collection of extension cords in varying lengths with some in dubious condition. They would all have to be checked, a vital safety exercise which took a whole day. A concern was to find that two of the cables, with moulded plugs and sockets, had been manufactured with transposed active and neutral, whilst another was made as a two-core cable with no earth and no insulation tapes to avoid confusion later. This proved to be a time-saver when the feed-point. The inverted L sections for 3.5 and 14 MHz extended out to the sides. The main body of the multi-band vertical sloped down 45 degrees from the tree to the feed-point. The inverted L sections for 3.5 and 14 MHz extended out to the sides.

Next a multi-band wire vertical-cum-inverted-L was assembled and coiled up carefully for transport. Each antenna wire and feedline were colour-coded with insulation tapes to avoid confusion later. This proved to be a time-saver when the antennas were going up and various feedlines brought into the operating position.

![Diagram of multi-band vertical antenna](image)

**DISASTER STRIKES**

It was now Wednesday. Every item had by now been checked at least twice. All was well. At least until that night. I was nearing the end of a Jubilee 150 Net on 21 MHz when the drive on my TS-520 became erratic. The next three hours of trouble-shooting produced no results and worse, the rig was inoperative on all bands.

An early start next morning saw the rig working on the two low bands for a short while. After about 30 minutes, drive disappeared again so that by mid-morning, it was clearly a case of no rig for the field day.

(The following week the fault was traced to overheating during long operation sessions. The trouble had not reappeared since providing better air flow around the transceiver. The heating had caused the driver-stage coil formers to expand slightly allowing the cores to move. They were locked in position and realigned after threading a strand of hair around each core — an old trick used by servicemen who would use a cotton thread to lock sloppy IFs on old broadcast sets).

Some phoning produced a happier result after the third call. Ken VK5SQW, had a spare IC-751 which he kindly delivered to my QTH a couple of hours later. Our field day hopes had been reinstated.

How all the gear fitted into one car was an exercise in packing. The boot was persuaded to close and the partly assembled 21 MHz beam was inoperative on all bands.

Arrival at the farm on Friday afternoon indicated a slight allowing the cores to move. They were locked in position and realigned after threading a strand of hair around each core — an old trick used by servicemen who would use a cotton thread to lock sloppy IFs on old broadcast sets).

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Arrival at the farm on Friday afternoon indicated a change in scenery since the first visit. Cattle has used the top paddock that day and left calling-cards all around the shed. Transferring the gear from the car was carried out with extra care. David took the car and headed down the range.

Previous arrangements were to check into the Jubilee 150 Net that night, so I concentrated on erecting a 3.5 MHz wire and connecting up the fence loop. No rainfall in the area for over three months meant the soil was dry and packed hard. After draining a near empty storage tank, plus sacrificing our drinking water supplies, an earth stake was persuaded into the ground. Quarter wave coupling radials for each band were also needed to switch between them and without confusion under contest conditions. A board to collect feeders and inputs to the ATU was made up so that the status of switches could be determined at a glance. Some manila card was added and ruled up to note tuner settings.

A bow and arrow had been promised by Bob VK5ZAL. While collecting this sky-hook tool, he mentioned some bits and pieces that were to be thrown out. A lucky coincidence that among the items were some porcelain feed-through insulators and a G.R. Laboratory Standard 1000 pF variable capacitor. Later that day, the insulators were installed on the switchboard for long wire selection. The capacitor and a Collins loading coil (from that TCS of 1954) were bread-boarded into a long wire tuner.

**SETUP**

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These radials proved useful when the loop or long wire were used. Without them, the tuner would only bring the SWR down to 2:1 at best.
The healthy sound of the band. Used to an S7 noise level most times at home, this was luxury. Noise was almost non-existent, particularly on the loop. This was a feature of the loop I had used before.

Using the inverted dipole, I called Gordon VK5KGS, and we were, as expected, S9 back in Adelaide. A change to the loop was dramatic to say the least. As the IC-751 had a variable power output control, I cut back to 10 watts using a fairly accurate power meter for the test. Other stations waiting for the J150 Net gave us reports of still over S9. The loading was reduced, processor taken out of circuit and the microphone gain wound back until finally the indicated power was 600 mW. We were still S9 in Adelaide and Port Augusta. A VK4, north of Townsville called in to report that the signal had dropped from S9 to S7 since the start of the tests.

The quiet location and antenna efficiency made working on the Net a most pleasurable evening. Stations like VK4, VK6, and 2L that I had often heard before at home were now 4-5 S-points up. All sounded well for some interesting operation in the contest the next night. The most important consideration now was an early night as I planned a brisk start on erecting antennas on Saturday morning.

A 6 am start did not impress David, but there was a lot still to be done. I left him to cook our breakfast while I pushed on. Lines to support a vertical and a two element sloper were soon in place with the aid of the bow and arrow. After some unsuccessful attempts when the fishing line snagged on tufts of dry grass, a feed for the line was fashioned with a screw-driver and cardboard carton. Rocks held the crude, but effective device in place.

The all-bander was intended as a true vertical. The coaxial cable now had to reach the rig place with the aid of the bow and arrow. After some unsuccessful attempts when the fishing line was snatched and U-bolted to this frame. Four radials per element were slopped down and weighted with rocks. Feed point impedance was around 30 ohms which the ATU handled with ease.

Listening tests indicated the beam worked east-west with some gain and excellent front-to-back ratio. However, when the figure-eight pattern was selected, results on Asian signals weren't as impressive front-to-back ratio for VK2-VK6. When activity around VK was slow the sloper provided some interesting DX. Although only worth two contest points per contact, working DX at this location was a breeze.

A 21 MHz vertical beam had been planned on the basis that it could be installed at ground level. Besides switching patterns from the operating position, it was designed to be set up a quarter wave in front of the shed. This would provide a large reflector with the idea of suppressing, or at least reducing, the rear lobe of the figure-eight pattern when feeding the elements in phase.

The 21 MHz vertical two-element beam using the shed as a reflector when in phase operation was relay switched.

The rocky ground at the point intended stopped any thoughts of getting support stakes in position. A two wheel jinker left when bush fires had destroyed the tray top was wheeled into position alongside the shed. The vertical elements were leashed and U-bolted to this frame. Four radials per element were slopped down and weighted with rocks. Feed point impedance was around 30 ohms which the ATU handled with ease.

Listening tests indicated the beam worked east-west with some gain and excellent front-to-back ratio. However, when the figure-eight pattern was selected, results on Asian signals weren't as...
Two-Element Sloper Beam — 14 MHz
The dimensions shown resonated at 14.190 MHz using the formula 143/\lambda, which is a good starting point for sloper calculation. The ends of the dipole were secured by nylon fishing line through soldered loops so there is no insulator end effect with the dimensions shown. A bell-wire twin-line switch the relay in a small plastic container hung from the tree. The twin-line use refers to ‘14.038’ auto-cable, NOT the usual figure-eight lighting twin flexible. A dip-oscillator put the velocity factor at 0.61 so the 3/8 λ feeders should be accurately checked. With no voltage applied to the relay, the beam fired east. Application of 24 volts DC selects the other dipole with the unused 3/4 λ in each case acting as inductive loading for a reflector element.

Tests with Ron VK5ON and Graham VK5KGR in Adelaide, confirmed the beam was working well. During the contest, JA, HL and YC stations answered “CO Contest” calls, so it was useful to be able to switch patterns and pick out the weak VK2 and VK4 mobiles for contest points.

After a quick lunch, I tackled the remaining planned antenna. This would be a sloping terminated V-beam (sometimes referred to as a ‘Cove’ array). The V would slope down from a tree at about 11 metres to bundles of carbon resistors made up to measure about 600 ohms connected to earth rods. This antenna was to provide an approximate 70 degrees included angle for VK4-VK8. One leg was reeled out to the north. This was approximately 12 gauge wire recovered from a 240/110 volt step-down transformer. The other leg would go across an adjacent paddock.

At this point I became aware of the bull which wasn’t supposed to be in that area over the weekend. Any approach to the fence brought a ‘Oh no you don’t attitude from him. This was his domain and not to be used for antenna experiments. Considering the remaining time left, a convenient solution was to erect the one long wire in four trees, roughly in a straight line which lined up on about 310 degrees. Not according to plan, but It would have to do. This long wire proved to be useful as the only radiator to work into Adelaide on 28 MHz. Considering the bearing, it was no surprise that it was effective with European DX on 14 MHz.

Only 46 minutes to starting time at 0700 UTC. David came back for sandwiches and coffee, pleased with his afternoon working DX on his favourite 14 MHz band. Both generators were performing faultlessly. Mine made a thumping din downhill by the dam and it would go on to echo right through the night. I hoped it would keep that 9 x 246 bull awake!

CONTESTING
Operating went along at a brisk pace. A dupe sheet divided for the three and six hour rules had been set up on a picnic table next to the operating position. This was valuable as there were a high number of calls from stations for repeat contacts even under one hour. They appeared to have no recording to avoid dupes and delayed things at times derating the time of the last log entry. Two dupes did slip by my guard as fatigue set in along the way.

At 1630 UTC, David sounded ready to give-in when we worked. Besides being tired, my signals were causing QRM havoc at his site. I must have nodded off shortly after, as indicated by an indecipherable squiggle on the log sheet for 1640 UTC. It would be 1928 UTC before the next contact. A burst of static proved a most effective alarm clock. A couple of VK4s were mobile around expected. The frame carrying the beam was moved closer to the shed. Results sounded better.
It appears many amateurs have trouble with the rotor of the CDE Ham II failing to lock.

Here is a simple and cheap method of rectifying the fault.

Listening around the bands, it appears that I am not the only one who has had trouble with the rotor of the CDE Ham II Beam Rotator failing to "lock" due to partial stripping of the teeth inside the lower casting (brake housing) and wear on the brake wedge.

As the cost of importing a new casting was prohibitive, over $100, I devised a simple and very cheap method of rectifying the fault.

First, separate the upper and lower castings (there is no need to disconnect the control cables) and drill 12 quarter inch (6 mm) holes, every 30 degrees around the perimeter of the bottom housing, so that the holes appear in the centre of the worn teeth, vertically.

Next, insert quarter inch (6mm) bolts, approximately one inch (25mm) long, with the head of the bolts inside, and lock into place with nuts on the outside.

The final step is to grind approximately an eighth of an inch (3 mm) off the brake wedge so that it clears the bolt heads when retracted, and re-assemble.

Taking the width of the bolt heads into account, whether they be square or hexagon, the beam will now be only able to travel about 20 degrees when locked. This modification has proved itself in gale-force winds at my QTH. It is interesting to note that later models have a square tooth design with matching square edge wedge.

The hardest part of this operation is taking the rotor down from the mast, and re-installing it...
Learning The Code

This method for learning the code is not for those that are experts or those who will learn by sound.

I have recently been hearing and re-reading some of the calls by the WIA for articles for publication, and have also been enjoying the articles that have been accepted for publication in response to such calls.

I am thus encouraged to make this contribution. It is not for those who are experts at the code. Neither is it for those who will learn by sound.

This method was given to me as an illuminated picture. An hour later I knew each letter. (Others have since done the same). What an encouraging change that was from the previous 30 years of frustration of being "unable" to learn it.

The next step was the "slog" of building up receiving speed. For this thanks to all Morse broadcasters and a special thanks to VK6s MY, PH and AUK.

The printed code in this article will immediately shape the dits and dahs into meaningful shapes and — Presto, here is meaning; here is Morel !!!

The first step is to print faint large capitals with a pencil and then follow around these outlines in red felt-tipped pen with the dits and dahs of the letter concerned. The letter that you sketch should be at least two-centimetres high.

On Figure 1, you will see step two. That is a list of nine words which together include the whole alphabet; print each word on a separate card.

The words depicted have been very carefully selected so that confusion between letters in the same word is minimised.

I would suggest that you first learn only the letters of word one with all the other letters covered. Then learn word two, etc. This way you should quickly master the letters.

The next step is to learn the nine-word list so that you can go through it from memory whilst driving, talking, or whatever.

One day, you will enjoy Morse code the same as many folk like good music!

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TECHNICAL SYMBOLS

From time to time Amateur Radio magazine and other radio magazines use symbols in technical articles. Eg The capital letter of Omega is used for ohms, lower case Lambda is used for wavelength. It is hoped the following article may explain to newcomers what the various symbols mean.

The Greek Alphabet is given for reference, as many Greek letters appear in Technical Texts

<table>
<thead>
<tr>
<th>Letter</th>
<th>Small</th>
<th>Capital</th>
<th>Name</th>
<th>English Equivalent</th>
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<td>Δ</td>
<td>Delta</td>
<td>d</td>
</tr>
<tr>
<td>z</td>
<td>ε</td>
<td>Ε</td>
<td>Epsilon</td>
<td>e (as in “met”)</td>
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<td>ζ</td>
<td>Ζ</td>
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<td>Ω</td>
<td>Omega</td>
<td>o (as in “broke”)</td>
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Specific Inductive Capacity or Dielectric Constant ............................................ K
Electrostatic Field Strength ........... X
Electrostatic Displacement or Flux Density ................................................. D
Electrostatic Flux ................................................. C
Capacity ................................................. m
Magnetic Pole Strength ................................................. μ
Permeability ................................................. μ
Magnetic Field Strength ................................................. H
Magnetic induction or Flux Density ................................................. B
Magnetic Reluctance ................................................. S
Magnet Induced Force ................................................. G
Self Inductance ................................................. L
Mutual Inductance ................................................. M
Reactance ................................................. X
Impedance ................................................. Z
Susceptance ................................................. B
Admittance ................................................. Y
Base of Napierian logs ................................................. N
Damping Factor ................................................. Q
Logarithmic Decrement ................................................. a
Amplification factor ................................................. s
Percentage modulation ................................................. p
Coil amplification factor or Q factor or other active devices (ωL/R). ................................................. c
Velocity of EM Waves ................................................. c

Prefixes for Multiples and Submultiples of Quantities

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<td>Kilo-</td>
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<tr>
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<td>Centi-</td>
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<tr>
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<td>Milli-</td>
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<td>Pica-</td>
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<td>10^-15</td>
<td>Atto-</td>
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Signs for Units Employed after Numerical Values

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<td>C</td>
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<td>J</td>
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<td>W</td>
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<td>Farad</td>
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</tr>
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<tr>
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<td>Wh</td>
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<tr>
<td>Ampere-hour</td>
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<tr>
<td>Kilowatt</td>
<td>kW</td>
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<tr>
<td>Kilovolt-ampere</td>
<td>kVA</td>
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<tr>
<td>Kilowatt-hour</td>
<td>kWh</td>
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<tr>
<td>Decibel</td>
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AMATEUR RADIO, August 1986 - Page 19
Antennas for Satellite Communications

Australia has been committed to communication by satellite, through the Intelsat network, since 1966, and we have now seen the commencement of the domestic system. Antenna systems are a vital link in the transfer of information between the ground station and the satellite. The extension of existing services and development of new services, such as direct broadcast satellite and international business systems, has led to an increased number of sophisticated satellites in geostationary orbit. These changes have required innovation in many areas, including antenna technology.

For ground-station antennas it is common to use a symmetrical Cassegrin reflector configuration (Figure 1b), while on satellites an offset reflector arrangement (Figure 1c, d) is used because it is easier to slosh for satellite launch and because the complicated feed network can be located close to the body of the spacecraft.

Figure two shows a typical radiation pattern of the Moree 1 ground station for the Intelsat system which was recently upgraded by Radiophysics in collaboration with OTC. The sharp beam and low radiation levels away from the peak (sidelobes) ensure that only one satellite at a time is seen. Low sidelobes were achieved by careful design of the aperture illumination (see Figure 3). The desired result was obtained by adjusting the shape of both reflectors of the 27.4 metre Cassegrain. Another feature of the design is the use of wideband corrugated feed horns described in Information Sheet 84/21.

Figure 3 — The optimum design aperture distribution for maximum signal-to-noise ratio and low sidelobe levels.

Shaped beams to illuminate a given coverage region (footprint) must be produced by an on-board satellite antenna, as shown for example in Figure 4. Commonly an offset reflector (Figure 1c and 1d) is used with a cluster of feed horns near the focus. Each feed horn produces a narrow beam and these multiple beams are combined to give the footprint.

Figure 5 — Contours of intensity of a shaped beam in 1 dB intervals. Peak level is 40 dBi.

CT4 amateur seeks sponsor for migration to VK

We have had some correspondence with a Portuguese amateur, Fernando J Fidalgo CT4VQ, ex CB6OZ and ZS1ABG, who would like to migrate to Australia and seeks an Australian sponsor who may be able to find him employment. He has had four years experience as a waiter in Portugal (1975-79), also as a salesman (1979-83), and a bank clerk in South Africa (1983-86). His English is good, and he is an enthusiastic DX operator. He is aged 32, married, no children.

If any reader (preferably a restaurateur) is able to help, more information is available from the Editor, PO Box 300, Caulfield South, Vic. 3162.

GLOUCESTER AMATEUR RADIO SOCIETY (C 1926)

This year, 1986, is the 900th anniversary of the Doomsday Book, an historic document in British history. The original idea was conceived in Gloucester Cathedral.

To celebrate this historic event, the Gloucester Amateur Radio Society has applied for, and received permission to use, the call sign G8DB during the month of September. The station will commence transmitting on Saturday, September 6, 1986 at 1200 UTC on HF, and also VHE The opening time and date coincides with the opening of the Gloucester Local History Festival, which will be located at the same site.

The station will continue operating on various days during September using the special call sign. The station will be located at Gloucester Oxtails Campus, Oxtails Lane, Gloucester, and QSL cards will be available for stations that contact G8DB. QSLs may be sent via the RSGB Bureau, or direct to G4AWM, 12 Laura Close, Longlevens, Gloucester, GL2 9JH, Great Britain.

Contributed by Nicholas Negus G6AWT, Secretary GARS
NEAR-FIELD AND HOLOGRAPHIC ANTENNA MEASUREMENTS

It is essential to be able to measure the performance of antennas used in satellite and ground-based communications. Since the early 1970s, largely in response to the increasing use of satellite communications, new measurement methods have been developed to overcome some limitations in classical methods of antenna measurement. Two techniques, the near-field and holographic methods, are currently under investigation at Radiophysics. These methods, while furnishing the usual radiation pattern measurements, provide extra information which can be used for antenna alignment and assessment. In addition the holographic method is efficient for in situ measurement of surface errors in large-reflector antennas used for satellite communications and radio astronomy.

The techniques under investigation are illustrated in Figure 1 for a three-metre diameter microwave dish antenna for a satellite system. Position three represents the far-field distance conventionally used for antenna measurements. The near-field method (position one) measures very close to the antenna, whereas the holographic method (position two) operates at a somewhat greater distance, although still much less than required for conventional far-field measurements.

An antenna range employing the near-field method is at present being set up at Radiophysics. This will be fully computer-controlled and will measure antennas up to 2.5 metres in diameter. The type of near-field method is specified by the surface surrounding the antenna on which the radiated signal is sampled. Figure 2 (a) and (b) illustrates the planar and cylindrical scanning surfaces chosen for the facility at Radiophysics. From samples of the signal received by a probe antenna at selected points on the surface the radiation pattern of the test antenna in the far-field region can be computed.

The holographic technique (Figure 2c) is similar to the near-field method in that samples of the receiver signal are taken on a spherical surface from which the far-field radiation pattern is computed. However, because the samples are taken at a greater distance the computations involved are considerably simpler, and therefore faster. Another difference is that a moving probe is unnecessary, as scanning is achieved by rotating the test antenna to specified angles to receive signals from a transmitter. The holographic antenna range at Radiophysics currently operates up to a frequency of 18 GHz, is fully automated and takes antennas up to two metres in diameter. The software developed for this facility is quite general and in the future will be utilised for in situ measurements of large reflector antennas.

Figure 1 — Compact antenna measurement methods.

Figure 2 — Contours of intensity of the signal produced in the aperture of a parabolic reflector at 2 dB intervals.

Figure 3 — Radiation pattern of parabolic reflector computed from holographic range data.

An advantage of near-field and holographic methods is that more information about an antenna is obtained in a single measurement. For example, Figure 3 shows the microwave image of a 1.8 metre diameter parabolic dish measured at 5 GHz on the holographic range. Such images can pinpoint alignment defects in the antenna and also allow assessment of reflector surface errors.

Four figure represents the radiation pattern of the above antenna computed from the holographic range data.

From CSIRO Division of Radiophysics Information Sheet No 84/18, written by G T Poulton and T S Bird and contributed by Tim Mills VK2ZTM

OUT TO PASTURE

The oldest continually operating communications satellite has been turned off after 19 years of service. The ATS-1 was launched in December 1966, providing an important communications link over the Pacific Ocean. It was designed originally for a three-year mission, but surpassed its design life by more than six times. The satellite carried several scientific instruments, including a spin-scan camera that provided the first wide-angle pictures of the Earth’s full disc and helped meteorologists track storm fronts. ATS-1 also was used for communications during emergencies and for day-to-day management of the US Trust Territory of the Pacific Islands, a group of more than 2000 islands, commonly known as Micronesia.

From ITU Telecommunication Journal, April 1986

NEW DXAC CHAIRMAN

John Parrott W4FRU, has been appointed DX Advisory Committee Chairman, following the resignation of Bob Thompson K6SSJ.

Condensed from The ARRL Letter, June 8, 1986
REMEMBRANCE DAY CONTEST SCORING

At the 1986 Federal Conference, the Federal Contest Manager, in his Annual Report to the Federal Council, recommended that the scoring formula for the Remembrance Day Contest be examined by someone versed in statistics.

The writer is not academically well qualified in statistics, but as one involved in the revision of the RD Contest scoring system in 1981, believes he can present the logic behind the current system, together with partially refined data from the past 12 years. This basis should make subsequent analysis by statistically bent members easier and their contribution is invited to fulfill the Convention Report recommendation.

The opportunity was also taken to separate the VK8 results to satisfy a further recommendation.

AIM OF THE RD CONTEST
The aim of the RD Contest, as expressed in past contest rules and in the Federal Contest Managers terms of reference is:

This contest is held to commemorate those amateurs who died during the Second World War and is designed to encourage friendly participation between all amateurs and to help in the improvement of operating skills of all participants.

HISTORICAL BACKGROUND
The Remembrance Day Contest scoring system has evolved over some 40 years with changes to keep pace with changing licensing conditions and members wishes.

The early scoring systems applied to full call licensees only (there were no other!) and a scoring table was devised to accommodate the difficulties faced with interstate contacts as well as the differing numbers of amateurs in each State.

With the advent of the Limited Licence, VHF/UHF contacts increased and intra-State contacts were permitted to score. The re-contact frequency for these has been a point of conjecture continuing to this day.

Various trophy score formulae were used. These included averaging the top six log entries, normalising by logs submitted to licenses issued (a participation factor), VHF/UHF bonuses and double score for CW, to mention a few.

The advent of the Novice Licence added new difficulties to RD contest management and in 1980, the VK6 Division reviewed the past performance of Divisions in the contest and recommended a simple scoring system coupled with a revised trophy formula to be adopted. The scoring base proposed was one point per contact and the formula was to include participation, activity and a weighting factor to equalise differing state performances.

PARTICIPATION FACTOR
The participation factor chosen was the percentage of logs submitted to the licenses issued, by Division. This involvement measure is consistent with the aims of the contest and is shown in Table 1 for the past 12 years, together with the number of logs received. Participation is plotted on Figures 1 and 2, first as the number of logs submitted (Figure 1), then as the participation factor (percentage logs to licenses on Figure 2).

Figure 1 suggests that the number of entrants has been remarkably constant over 12 years whilst the licenced population has grown, yielding the falling participation factors of Figure 2.

ACTIVITY FACTOR
For the activity factor, the ratio of contacts to logs submitted was adopted. This is in effect, a Divisions average contacts per entrant.

Unfortunately, neither the Amateur Radio magazine contest results nor the Contest Manager's records show the "contacts made" details for a number of years between 1978 and 1980, however by using average divisional points per contact it is possible to approximate to contacts made. Post 1980, one point per contact prevails (ignoring minor errors due to "CW counts double" interludes in the scoring system).

Activity factors, computed as both points per
shown

The product of the participation factor and the pre-1980 scoring table influence from Figure 3 and plotted on Figures 3 and 4. After removing activity factor yields the raw scores which must be reasonably consistent and not subject to scatter in the data (see VK2), but their use avoids the need to use higher order curves of more dubious application.

WHERE TO IN THE FUTURE?
The writer believes the requirements of the VK6 review have been achieved, for the scoring system is simple, both participation and activity factors in the trophy formula and all divisions have an equal chance of winning. There is concern that a division may run dead in order to receive a high weighting factor, however this poor performance would be necessary over many years to affect the curve fitting over 10 years.

One way to achieve this would be to not submit entries for several years. I do not think amateurs scattered over a State could be "organised" in this manner.

What about some of the other rules? The VHF/UHF re-contact interval has been two-hours in 1980, one-hour from 1981 to 1984, three-hours in 1985, and two-hours this year. The interval has to be short enough to retain the VHF/UHF operators interest and participation, yet long enough for the VHF/UHF intra-State contacts (both ends of which count to the same division) not to swamp the contest results.

CONCLUSIONS
The RD Contest scoring system and trophy formula have changed over the 40-plus years of the contest, the current system aims to include participation and involvement, to which a weighting factor is applied to give each Division an equal chance of winning the trophy based upon past performance.

log and contacts per log, are shown in Table 2 and plotted on Figures 3 and 4. After removing the pre-1980 scoring table influence from Figure 3 to create Figure 4, the vestige of a sunspot cycle periodic variation can be detected in the resulting activity curves, which are reasonably consistent and not subject to great variations over 12 years.

RAW SCORES
The product of the participation factor and the activity factor yields the raw scores which must be weighted to compensate for historical divisional performance differences. The raw scores arrived at from Tables 1 and 2 are shown in Table 3. Unfortunately, the mathematical expression for the raw score shows numbers of logs submitted as both a numerator and denominator, vis:

\[
\text{Raw Score} = \frac{\text{No logs submitted} \times \text{Contest points}}{\text{No licenses issued} \times \text{No logs submitted}}
\]

This mathematical correctness has confused some members who have assumed that as the expression cancels it is excluded from consideration.

WEIGHTING FACTORS
To the raw scores there are assigned weighting factors or multipliers which are necessary to achieve a seven-way dead heat. These are shown in Table 4.

When the contest rules are announced in Amateur Radio each year, the Contest Manager issues the current years weighting factors, actually predictions based upon a linear least squares fit to each divisions past 10 years of weighting factors and projected forward one year.

Figure 5 shows each division's achieved weighting factors, the linear fit and the predicted next years (1986) factors. The linear fits are at times not particularly brilliant due to scatter in the data.

TABLE 1 — RD CONTEST LOGS SUBMITTED AND PARTICIPATION FACTOR = (Number Logs divided by Number Licenses) %

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TABLE 2 — RD CONTEST POINTS PER LOG AND CONTACTS PER LOG ENTERED

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TABLE 3 — RD CONTEST RAW SCORES = PARTICIPATION FACTOR X ACTIVITY FACTOR

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RADIO AT THE GAMES

During early August 1986, the Korean Amateur Radio League Inc (KARL) has been granted permission to install radio facilities in the Olympic site for the purpose of enabling KARL volunteers to provide traffic service for competitors at the games. The Korean Administration has also authorised all visiting competitors and officers of games who possess amateur licenses to make QSOs from the radio facilities available at the Olympic site.

In an effort to help achieve a high status for radio amateurs around the world by its support of amateur radio at the 86 and 88 Olympics, the Administration plans to issue temporary operating licenses to those visiting competitors and officials from all countries including those which do not have reciprocal agreements with Korea.

All visiting amateurs are advised not to take any type of portable transceivers, including handhelds, into the Republic of Korea, as the use of portable radios by amateurs is prohibited.

To commemorate the occasions, the following special stations will be operating during the games period.

86 Asian Games — BK86AG
88 Seoul Olympic Games — 6K88SOG

During the games period, individual HL stations will use the suffix of 86 for the Asian Games and 88 for the Seoul Olympic Games.

Contributed by Young Soon Paris HL 1IFM, President, KARL

NEW NAME, NEW NUMBER!

The Australian Coastal Surveillance Centre is now known by the title Federal Sea Safety and Surveillance Centre. Telephone numbers are as follows:

Coastwatch (Emergency unusual or suspicious marine or aircraft activities in coastal areas) — (062) 47 6666 — (Free STD call or reverse charges)

Search and Rescue (Sea Safety) — (062) 47 5244

Contributed by Alan Hawos VK1WX

Write for our latest Catalogue.

ATN ANTENNAS

56 CAMPBELL STREET, BIRCHIP, VIC 3483.
PHONE: (054) 92 2224.
CONVERSION OF THE PYE OVERLAND FM-738 TO SIX METRES FM

With the disappearance of Channel 0 in the Melbourne area, this should provide an ideal climate for an increase in six metre activity, particularly the FM net frequency on 52.525 MHz.

Through disposals outlets, there have been available at various times, the Pye FM-738 which is inherently suitable for conversion to six metres.

Before conversion, give the unit an external visual check to ensure that everything is in order, etc.

LOW PASS FILTER

Remove the two 10 pF capacitors and replace them with 33 pF capacitors. Next remove the 30 pF capacitor and replace it with a 68 pF capacitor. Good quality ceramic high voltage types should be used (630 volts).

TRANSMITTER MODIFICATION

In order to reduce the work associated with the transmitter exciter board, the transmit crystal formula is changed from divide by 24 to divide by 16. This places all tuned circuits in the exciter within the tuning range of the new frequency.

Turning now to the main transmitter chassis, pad both the primary and secondary of T203 which is inherently suitable for conversion to six metres.

Place the meter on pin 4 of test socket (signal/strength indication). Connect a power meter to the aerial socket. Insert a 3.282.81 kHz D-style series resonant crystal into the crystal socket and, with a 22 pF disc ceramic capacitor (630 volts), connect the meter to the chassis and the negative to pin 5 of test socket and adjust bottom and top turns of T203 for maximum output. Transfer the meter to pin 7 and adjust C220, C221, and C222 equal in capacitance. Reconnect R211 (PA screen resistor) and adjust C224 for maximum output into the power meter, then repeat C220, C221, C222, and C224, together with the PA coupling link into the power meter. This may have to be repeated several times and depending on the age of the valves, 15 to 25 watts should be obtained.

Final tuning of the valve stages should be done with the unit sitting on the top cover or a metal plate to allow for detuning of the high power stages when the radio is finally placed into its cover. When tuning is completed, momentarily remove the transmit crystal and output should fall to zero. Then net the transmitter crystal and set the deviation to about 5 kHz. This can be done with the help of another station, off-air (RV1).

RECEIVER MODIFICATION

Once again, to simplify modifications, the crystal formula is altered to inject on the high side of the carrier frequency.

Receiver Crystal Operating Frequency + 10.7 Frequency

Gently remove the cans from the front end coils. Solder a 10 pF ceramic capacitor across L1, remove the 10 pF capacitor from across L2 and replace it with a 22 pF. Remove the 10 pF from L3 and solder a 22 pF in its place. Remove the remaining 10 pF from across L4 and depending on the age of the valves, 15 to 25 watts should be obtained.

Once the receiver is switched off, carefully remove the receiver crystal and set the deviation to about 5 kHz. This can be done with the help of another station, off-air (RV1).

PROJECTED WEIGHTING FACTORS FOR 1986

<table>
<thead>
<tr>
<th>VK1</th>
<th>VKS</th>
<th>VK2</th>
<th>VK6/9</th>
<th>VK3</th>
<th>VK5</th>
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TABLE 4 — RD CONTEST ACHIEVED WEIGHTING FACTORS

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GOOD NEWS FOR TWO-LETTER CALL SIGN HOLDERS

The Federal Office has received several complaints from members that two-letter call signs were difficult to find when embedded amongst the three-letter calls seen on the 1986/87 Call Book.

The call sign listing was prepared on the WIA computer where all sort programs do a straight ASCII sort. This leaves the two-letter calls in an alphabetical form amongst the three-letter calls.

New programs have been written that will sort by length of call sign, hence the 1986/87 Call Book will have the two-letter calls preceding the three-letter one.

At the 1986 Federal Convention, Council resolved that WIA members should be identified as such in the Call Book. This will be done in the 1986/87 Call Book by placing a symbol before the call sign of WIA members. We apologise in advance to any members whose second call sign may not be identified correctly.

RECEIVER ALIGNMENT

Insert a 31612.5 kHz series resonant D-style crystal into the crystal socket, and, with a suitable high impedance RF AC meter connected across the socket, adjust the series crystal coil for maximum reading. With a DC multi-meter on the 2.5 volt range, connect the positive lead to TP2 (next to C25 on the main board) and the negative lead to the negative supply, and adjust L6 for maximum reading.

Connect the meter to pin 1 on the test socket (signal/strength indication). Connect a signal generator, tuned to 52.525 kHz, via a two turn coupling link to L5 and tune L5 for maximum signal. Repeat for L4. Connect the signal to the aerial connector and adjust L1, L2, and L3 for maximum reading, reducing the signal generator level as required. Carefully fit all the front end cans and replace L5, L4, L3, L2, L1 and L6 several times for maximum signal.

When complete, if you are able to measure the quieting it should be 20 dB for .5 uV RF input or better.

Finally, net the receiver crystal by placing the meter on pin 3 of the test socket and, with a signal known to be on frequency, adjust the series crystal coil slug for zero volts on the meter.

So, there it is — the conversion is not difficult and can be done in a couple of hours. I look forward to hearing you on six metres!

EDITORIAL NOTE: Due to space limitations, the circuit diagrams cannot be reproduced here. Those requiring copies for their personal use may obtain them from the WIA Federal Office, PO Box 300, Caulfield South, Vic. 3162, on request accompanied by a business sized SASE.

SPACE STATION

The Soviet Union has a Space Station, Mir, which was launched on February 9. The station has been heard in Canada on 143.625. Other frequencies are as follows:

<table>
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<th>Frequency</th>
<th>Call Sign</th>
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<tbody>
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<td>143.825</td>
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From CRRL News April 30

AMATEUR RADIO, August 1986 - Page 25
A short wave standard frequency and time signal broadcasting service VNG has operated from Radio Lyndhurst, Victoria, for 20 years. Telecom Research Laboratories were responsible for the establishment of the service and continue to maintain the carrier frequencies and instant of time, as transmitted, to within close tolerances of the Telecom (ATC) Standard of Time and Frequency operated at the Clayton Laboratories complex.

An updating of the broadcast time code format has been implemented which adds time of day and day number of the year information without alteration to the existing minute, five-minute and 10-minute identifying sequences or DUT1 coding. The DUT1 Code relates the deviation between the Earth's angular position time scale UT1 and the Co-ordinated Universal Time Scale UTC.

The addition of this extra information in binary-coded-decimal (BCD) form, will enable time code receivers to operate directly from the received signal by decoding the pulse sequences and updating a receiver's time output completely every minute.

For maximum security under marginal reception conditions, the so-called "slow code" at a bit rate of one Hertz has been adopted, the complete information thus extending over most of one minute. The low transmission rate also permits decoding by the use of simple recorders.

As VNG has Australia-wide coverage, the upgraded time service will have many new applications where HF radio reception is the only convenient source of accurate time information. Such applications include surveying, data logging, telemetry systems and shipping.

The method of encoding used complies with CCIR recommendations for Time Codes and is similar to the "slow codes" transmitted from the standard frequency and time signal stations MSF at Rugby in England and DCF77 near Frankfurt, West Germany.

The new code has been on air since May 14, 1986 and has created renewed interest in the VNG service provided by Telecom.
At the 1982 Federal Convention it was determined "at this time" that extension of Novice facilities was not an appropriate policy to pursue. However, it was moved at the 1986 Federal Convention that DOC be asked to consider the extension of Novices to the VH/F/HF spectrum at or in conjunction with consideration of the direction of amateur radio into the 21st century. This recommendation was unanimously carried by the Federal Council.

Since 1982 there has been an "explosion" of interest in the community in micro-computing, and interest in all of radio amateurs in particular. Typical applications being:

- to aid design calculations in amateur projects
- to provide data base facilities for contests and logging
- to track others in satellite
- to enable the amateur to encode and decode high speed data communication.

It has been stated by Messrs Linton and Harrison that the Amateur Service needs to attract younger participants and that computer hobbies represent a potential target for recruitment. While it is the opinion of the writer that this potential has been overstated it is not denied that some potential does exist. Such people would see the opportunity to extend their world of "keyboard" communication via the public telephone network to communication by radio.

To exploit that potential it has been suggested in the same paper that an entry into amateur radio by way of a lower level of examination to those currently available be sought. Many members of the WIA have expressed views against lowering the technical standard of entry as "numbers" should not be the criterion on which the success or otherwise of the hobby is judged. With increasing levels of amateur licensing in Australia already the DOC principle of "let the user pay" has crept into the examination structure and is making it economically unattractive to young people to consider amateur radio as a hobby when home computing, for example, incurs no cost beyond equipment and certainly no requirement for formal study and examination.

It is, therefore, postulated that the lowest entry into amateur radio should always be by way of the Novice licence. However, since its inception in the amateur service has always been seen as a "limited" licence and it must always be an incentive to upgrade to either Limited or Unrestricted licences. Consequently, there has been reluctance to consider widening the scope of the facilities available to Novices.

Considering the wide technical scope of the Novice Examination syllabus, effectively examined at an appropriate level by the present range of multi-choice questions, there is relatively little to communicate by radio. The CBRS already permits operation, without qualification by examination and at lower licence cost, using:

- AM and SSB on 27 MHz and
- FM on 470 MHz, including use of repeaters.

There may be pressure by the CBRS for DOC to authorise digital communications on 470 MHz which may be commercially available. This would provide an alternate path for the computer hobbyist interested in digital communication by radio, to the dedicated simplex facilities.

In giving consideration to reciprocal licensing with Japan, where a "no-code" telephony licence exists, the DOC are proceeding on the basis of CMRA's recommendation that the DOC should apply to the Japanese operator. With de-regulation of modes and bandwidths above 50 MHz one can assume that this licence will permit digital modes as well.

In view of these factors the WIA must now look toward seeking expansion of Novice facilities. Not every member wishes to buy a licence for the purpose of obtaining his licence. Operation within present mode and frequency limitations will eventually cause enthusiasm to fade and there could be a loss to amateur radio of those, who "having been there, done that" see little challenge available to them without further study and formal examination.

**PROPOSED EXTENSION OF NOVICE PRIVILEGES**

Perhaps the time has come to open up the VH/F/HF amateur band spectrum to the Novice operators. Currently, the syllabus is oriented toward CW, AM, and SSB operation and these are the only modes available to Novices. It is proposed that extension of privileges should involve the introduction of FM techniques into the syllabus at an appropriate level. Some may say this will make the syllabus "too easy" but examination by FM techniques is not appropriate. The Novice licence is a "no-code" licence. With de-regulation of modes in Japan, where a "no-code" telephony licence permits amateurs throughout Australia to have the same privileges, a Novice allocation of 52-54 MHz would enhance activity on all appropriate modes in the HF region.

At present DOC are tending toward greater de-regulation of the amateur service, with particular reference to frequencies above 50 MHz. Consequently, it is now appropriate to assess their reaction to new Novice initiatives from the WIA.

**WHAT AND WHERE?**

Assuming that consent to this proposal is received then we must decide what to seek from DOC in extended privileges for the Novice operator. Arriving at consensus is likely to be more difficult than getting agreement from DOC (or sorting out the technical standard of entry as "numbers"

One factor will involve little argument, namely permitted power. There is no justification for seeking power more than current Novice level on the HF bands.

Given the proposed addition to the Novice syllabus, there is no logical reason why all the emission modes allowed to Limited and Unrestricted licences should not be allowed to Novices. There could be philosophical objections to pulse modes and digital communication but it is essentially for a "no-code" licence. Novices are unlikely to become involved in the more "hi-tech" modes and yet not be sufficiently motivated to upgrade their licences.

There are certain modes which have been a topic of discussion and often is the most heated debate. We have been used to the philosophy of a limited Novice segment being allocated to overlap the CW and telephony sections (as defined under earlier band planning) of the bands gave the opportunity for Novices to communicate with Unrestricted licences on both modes. However, band planning in the VH/F/HF spectrum precludes application of the same philosophy without more than one Novice class of operator. It really should not be necessary to reduce the wider range of transmission modes which will then (hopefully) be available to the Novice operator.

One factor that should not be overlooked is the strong incentive to open up the VH/F/HF bands in their entirety with perhaps a reservation in respect of six metres. Does this appear as heresy to the Limited and Unrestricted class of operators? It really should not be. It is unlikely that this will cause the restriction to a mean power output of 10 watts does provide a clear distinction between the Novice and the higher grades.

In seeking to arrive at consensus one or two other factors need to be considered.

What about six metres where power restrictions, based upon geographical location, will apply to all operators in the 50-52 MHz region? Are there too crowded to accommodate Novices?

What about 10 metres if FM is to be allowed to Novices and repeater operation is approved for this band?

Why should Novices not have access to the Amateur satellites?

Because of limitations in the 50-52 MHz section of six metres it would seem inappropriate to propose allocation here at least until other usage permits amateurs throughout Australia to have the same privileges. A Novice allocation of 52-54 MHz would enhance activity on all appropriate modes in the HF region.

Looking at the Australian Band Plan and would provide a transition ground between HF and VHF techniques for the novice interested in construction and experimentation.

Is the two metre band too crowded already? Maybe some of the repeaters are overloaded but then others are rarely used. Some of the dedicated simplex frequencies may seem to be well used but in reality, even in cities like Melbourne and Sydney there is much open space on two metres particularly at the low frequency end where there is virtually no CW activity.

Is there any reason to believe that Novices will be any less gentlemanly than others in respecting the satellite downlink portion of this band?

Given 10 metre FM repeaters why should Novices be denied their use? With the introduction of FM into the syllabus this could be a "shot in the arm" for the hobby of aeronautical, etc.

Are 10 watts enough for RTTY at 45/50 baud, the 3.5 MHz band is certainly not the place. The amateur service has many under-used emission modes and digital communication by radio. If it is to be retained by the amateur service it must be seen to be utilised. What better prospect of increasing the occupancy of two metres is the 3.5 MHz band? It might even permit SSB contacts on 70 cm without having to make prior arrangements. A Novice licence would further de-regulate the amateur service, with particular reference to frequencies above 50 MHz. Consequently, it is now appropriate to assess their reaction to new Novice initiatives from the WIA.
easily available to computer hobbyists what about a VHF only novice licence without the code test? This would not require any additional DOC cost for special examinations. Such a licence could perhaps be called a Limited Novice Operators Certificate (LNOCP). The overall Australian licensing structure would then be:

<table>
<thead>
<tr>
<th>Power Level</th>
<th>Long Power</th>
<th>Low Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120W Mean 400W PEP</td>
<td>10W Mean 30W PEP</td>
</tr>
</tbody>
</table>

AOCN LAOCN NAOCN LNAOCN HIF/VHF/UHF VHUF/UHF

Since the principle of a "no-code" VHF licence already exists why not extend this to the novice at his power level?

CONCLUSION

There can be no over-riding reasons for operators in the amateur service to reject the concept of a VHF only novice licence. To do so would perpetuate low occupancy of the VHF/UHF spectrum and risk ultimate loss to professional interests. We may even be able to sustain a few VHF contests as in Europe — short term contests in contrast to the Ross Hull, which only satisfies the dedicated few with free time over the relevant period.

The proposals cannot be said to degrade the technical standards of the amateur service in Australia and yet they remove the daunting code test for a computer hobbyist who might otherwise attain the Limited Novice certificate.

In any case, as we are looking toward the 21st Century how long will CW survive? Will the newcomers continue the tradition notwithstanding it being the most effective mode of communication or will it wither and die with the present generation of amateurs?

What is a misleading and anachronistic term is CW? Misleading because so called continuous wave is broken up into dots and dashes and anachronistic because who refers to a continuous wave in any other context today? It is a digital mode dependent upon the human mind for encoding and decoding intelligence which will ultimately be replaced by the computer generated digital modes which are just as good for communication in marginal conditions but don't supply the oft expressed entry filter into amateur radio.

Let the WIA know your wishes for the future of the Novice licence.

HERBERT PETER CHRISTIAN LARSEN — OA/VK4JW (SK)

Records disclose that a nest of experimenters were active in the Charters Towers, Cairns and Townsville areas of north Queensland between the early and late 1920s. There were some seven or eight in total and only four of them appear to have been fully licensed at that time. One of the latter was the late Herbert Peter Christian Larsen OA4JW — and, from anecdotal stories received, he was something of a character.

Herb is remembered in the north as the instigator of the Nor'West Rock Crushers Club. Speculation as to the significance of this title remains to this day; one suggestion being that the club members were the first to use crystal controlled rigs, another that they had a common interest in mining. In its day Charters Towers was one of the richest gold mining towns in Queensland. In 1872, with a population of 31,000, it boasted 40 public houses (pubs)!

He had a reputation for enjoying an occasional glass of ale; in fact, it could be said that he had it permanently on tap, as he worked at the Charters Towers Brewery. Endowed with the call sign VK4JW, one wonders if he was ever dubbed "Four Johnnie Walker."

An extract from Herb's log, that has been carefully preserved for posterity, shows that he was one of the few amateurs to pick up the transmissions from Sir Charles Kingsford Smith's Southern Cross, on the last leg of its dramatic trans-Pacific flight in 1928. Herb's log (when still an SWL) verifies the claim of Tom Elliott 4CM, that 'Smithy' experienced extremely bad weather and was in some difficulty because of it.

Herb obtained his AOCR No 439, on September 25, 1928 and was licensed as OA4JW. The Townsville Amateur Radio Club advises that it is the oldest licence held in its records. The club also has extracts of his log, as well as photographs and other papers. VK4JW became a full member of the WIA in 1936.

One of the accompanying photographs shows Herb sitting at an extra large broadcast band receiver, so large that one wonders if it was a home-brewed unit. The other is a reproduction of his proper rig. Note the one tube transmitter, at right, standing above a hefty power supply.

Thumbnails supplied by Evelyn Bahr, VK4EQ, TARC Historian

HOUSEKEEPING CRASHES

After nearly three years of on-orbit performance, AO-10 has suffered a serious, if not fatal, malfunction. The central component or Integrated Housekeeping Unit (IHU), experienced a major malfunction on May 17, when users began to notice some odd symptoms. The telemetry mode did not switch from PSK to RTTY or CW. Also, the Mode B transponder was locked on during a perigee passage. This put the satellite in a catatonic state.

It appears partial repairs can be made but longer-term prospects are somewhat more clouded.

Analysis of the fault is proceeding with experts from around the world considering the symptoms. Most are convinced the problem was caused by solar or cosmic radiation. The 16 k-memory chips are susceptible to the debilitating effects of exposure to radiation. The effects are cumulative so an overall degradation of the memory is suspected.

Karl Meinzer DJ4ZC, President of AMSAT-DL, a prime mover in the Phase 3 Project, says the current problem is survivable and there is a reasonable chance many functions can be restored.

Karl hastens to add that the current fault is the harbinger of a new class of problems AMSAT will be seeing more often. It is emblematic of the inevitable degradation of the memory.

Condensed from The ARRL Letter, June 6, 1986
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- FV102DM ext VFO $400
- FV700DM ext VFO $395
- YS60 1.8-60 MHz $128
- YS500 60-500 MHz $105 PWR/SWR meters (reads PEP and AVGE)
- Handhelds all with FNB-4 NiCad
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- FT209RH $375
- FT703R $379
- FT709RH $419
- FT290R all-mode $499
- FT270R 25W $550
- FT770R 25W $699
- FT2700RH 2m/70cm 25W $865
- FL2010 2m linear $120
- FRG8800 HF $900
- FRG9600 VHF/UHF $805, SOLD OUT
- FRV7700A, B, C, F VHF converters for FRG7700 $99
- EK1501 Iambic Electronic Keyer $225
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VIATEL: what’s in Telecom’s new service for the users

SHORTWAVE RADIO: opening up worlds for the disabled

SATELLITES: launching the second generation

REVIEWS: Peter Williams on the ATS803 receiver
Jon Fairall plays with Polar Instruments T1200
Louis Challis tests KEF GT200 automotive speakers

PROJECTS: the modem is complete
a parametric equaliser
C64 function switches.
Kenpro KT-220E Two-Metre Hand-Held Transceiver

The two-metre FM hand-held transceiver must be a popular market. Here is yet another one to complement the several already available through local outlets. Kenpro products have been available on the local scene for many years and they are well-known for antenna rotators and ancillary amateur equipment. I am not sure if Kenpro are related to the original Ken Company who produced the first two-metre hand-held, sold in this country many years ago, the famous KP-202.

The subject of this review, the KT-220E, is marketed in the USA under the Santec brand and is known as the ST-20T.

Well, let us look at the KT-220 in detail to see what it has to offer. It is a handy size, being just a little longer than the well-known Icom IC-2. The width and depth are about the same. The actual measurements are 18 x 4.5 x 6.5 cm (HDW). The weight is 550 grams compared with 525 grams for the IC-2.

It is interesting to note that the battery pack of the Kenpro is interchangeable with the Icom, although the standard battery supplied with the KT-220E is a 9.6 volt unit as against the smaller 8.4 volt power pack.

The Kenpro has all the features of the opposition plus a few more. Frequency selection is via a 16 button key-pad. A LCD readout displays transmit and receive frequency, memory or non-memory operation, scan stop mode, repeater offset and a clock. The top control panel has audio volume/power on/off, squelch, external microphone speaker outlet, high/low power selector, external 13.2 volt power input socket and the indispensable adjunct for the enthusiastic two-metre operator, an S-meter.

The side panel has the PTT bar, a button to activate the S-meter/LCD display illumination, a slide switch to lock the frequency control panel and a battery release button.

Frequency coverage is from 144 to 148 MHz in 5 kHz steps with an overlap at each end of the band. There are 10 memories, each can be programmed with the required offset. Four scan modes are available, the first stops on a signal as determined by the centre zero detector, and then holds for 15 seconds before resuming scan.

The second mode stops on the first signal found and stays on that frequency. The third, like the first, stops but does not resume the scan until the transmission stops and the fourth is the memory scan which can be programmed to skip any of the selected memories not required at that time. A manual scan is also available with up/down buttons.

With the standard battery, power output is rated at 3.5 watts on high power selected, 0.5 watts on low power. Output can be increased to five watts using an external 13.2 volt supply which, as mentioned earlier, can be easily plugged into the top panel connector.

The KT-220E is supplied with a flexible stubby antenna, a belt clip, a wall-plug-type battery charger, a selection of connector plugs, an earphone and instruction book.

ON THE AIR

As with any key-board controlled transceiver, the operation of the KT-220E takes a bit of practice. Most of the buttons have double functions with the secondary function becoming available through the 'A' or function button. In the manual mode, most required frequencies can be selected by entering one or two figures and then pressing the set button. For example, enter 65, press set and you are on 146.500 MHz. You can, of course, enter the frequency by dialing in each number in turn if you have plenty of time.

With the frequency and offset selected, its just a matter of pressing the function 'A' button, the memory button 'D' and required memory channel number, eg '9' and there you are. Be prepared to sit down for an hour or two to sort it all out. The instruction book is reasonably well written in this regard.

Received audio quality from the built-in speaker is good with a crisp sound, but like most hand-helds is somewhat down in power output. With a good quality external speaker connected, both the quality and output level were good.

Transmit audio was reported as very clean and clear quality. Kenpro do offer an external speaker microphone as an option, but this was not available to test, however, again coincidently, the Icom HM98 speaker/microphone worked very well with the Kenpro. I often get the impression that most Japanese manufacturers buy in many of their components from the same source. In other words, I do not think that Icom, Yaesu and Kenpro make their own brand of microphones. Stick a label on it and it turns into whatever brand is wanted.

A light is provided to illuminate the S-meter and LCD display. It works quite well for the meter but is useless for the display, just where it is needed most.

The keyboard buttons have a soft rubbery feel. I noted that at times one of them had a tendency to stick in and while this did not seem to affect operation, it might be interesting to see if this becomes a problem in the future. Also, the buttons are rather small. I found that they were better operated with the finger nail rather than the finger.

UNDER TEST

Perhaps one of the more important tests with a battery powered hand-held transceiver is the current drain. I carried out two series of tests to check this. One with the normal 9.6 volt battery connected and the second using 13.8 volts from an external power supply. The results with the resultant RP power output were as follows:

<table>
<thead>
<tr>
<th>Power Output</th>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.6 volts</td>
<td>850 mA</td>
<td>350 mA</td>
</tr>
<tr>
<td>13.8 volts</td>
<td>800 mA</td>
<td>300 mA</td>
</tr>
</tbody>
</table>

The power output figures are right on specifications. The current drain is fairly high for the 250 mA/h battery so you would need to keep overs fairly short. With 13.8 volts connected, a full five watts output is available, well within the ratings of a simple one amp power supply.

I next measured the battery drain on receive. With the receiver squelched and a low audio output, the drain was 75 mA. At full audio output with no audible distortion, it was 180 mA. Again, it is a case of keeping the volume as low as possible for extended battery life.

Power output and audio distortion was next checked. Feeding an eight ohm terminating audio watt meter, and a noise and distortion meter, there were no problems noted. The output power at 95 per cent distortion was 375 mW, 30 per cent distortion at 400 mW.

This indicates that the total audio output is rather limited. At low volume, it sounds fine but if used in an average car at 80 to 90 km/h you might find it lacking. However, as mentioned...
earlier, an external speaker can make a big difference. Receiver sensitivity was checked. At .25 uV the SINAD was 12 dB and at .1 uV it measured 6 dB. The .25 uV figure is right on specifications. The S-meter is naturally rather small. It is calibrated with nine divisions presumably for nine S-points and labelled 1, 3, 5, 7 and 10, which I guess means S9 + 10 dB. Whatever, the following results were noted.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S3</th>
<th>S5</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5uV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not reached</td>
</tr>
<tr>
<td>7uV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8uV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10uV</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40uV</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

The meter would not go beyond S8, regardless of the signal input. However, it is better than nothing. On transmit, the meter becomes a volt meter. At the junction of the red and green section on the scale, it is exactly 9.6 volts with 13.8 volts indicated at the start of the red 10 on the S-meter scale. The receiver front end performance appeared to be quite good for a hand-held. While receiving a weak signal of around .5 uV, I injected a strong signal 50 kHz away. It required an input of 10 mv to degrade the signal-to-noise ratio by 2 dB on the wanted signal.

INSTRUCTION BOOK
The book runs to 26 pages. It is well written and contains a lot of useful information. The circuit diagram is spread over four pages while printed circuit layouts cover another tour. A page of trouble shooting hints mainly cover operating problems. The actual operating instructions are good. Flow charts show how the various functions are programmed.

EVALUATION AND ON-AIR TEST AT A GLANCE

APPEARANCE
Packaging
*** Strong carton with foam inserts. Size
*** Not the smallest full featured HT, but very good. Weight
*** Again not the lightest, but very good. External Finish
*** Very clean and presentable finish. Construction Quality
*** Good internal wiring and construction.

PANEL CONTROLS
Location of Controls
*** Key-pad and top panel controls well located. Size of Knobs
** For a hand-held, quite large. Keyboard buttons rather small. Status Indicators
*** All built into the LCD readout. Transmit, receive, offset, memory, scan, battery alarm.

S-METER AND DISPLAY ILLUMINATION
* S-meter clearly lit but very little gets to LCD display.

RECEIVER OPERATION
Memories
*** Ten memories with repeater offset included. S-Meter
** Better than nothing. (See test section). Sensitivity
*** As good as most other hand-helds. Signal Handling
*** Better than most hand-held transceivers. Internal Speaker
*** Clear distinct quality but output limited.

TRANSMIT OPERATION
Power Output
*** Very good output for most applications. Battery Drain
** Keep your overs short. Audio Quality
*** Crisp clean audio. Metering
** Indicates battery voltage only. No output indication.

MANUAL
Owners Hand Book
** Clear adequate instructions. Circuit and board layouts.

OVERALL RATING
*** If you need a hand-held, this one is worth looking at. Rating Code: * Poor; ** Satisfactory; *** Very Good; **** Excellent.

MORSE CODE TONE CONVERTER

This device varies the tone of Morse code from tape or record to suit ones own individual taste.

Also when the play-back speed is varied, the tone remains the same. A key facility has been included for sending practice Morse. Rb is selected with no signal input so that Q1 Vc is about 90 mV. This allows for a wide range of input signal level to be handled.

Connect the input of this device to the speaker output of a tape recorder or record player whose volume-control can be set at any point above the threshold of operation. The unit was constructed on Vero-board and placed in a small wooden box with a sloping metal front panel.

Figure 1 — Morse Code Tone Converter.
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<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-940</td>
<td>The ultimate HF rig complete with PS, Auto Tuner + $25 Headphones bonus —</td>
<td>$2775</td>
</tr>
<tr>
<td></td>
<td>SAVE $225</td>
<td></td>
</tr>
<tr>
<td>TS-440</td>
<td>The new ultimate Mobile HF rig with Auto Tuner, MIC and $25 Headphones —</td>
<td>$1485</td>
</tr>
<tr>
<td></td>
<td>SAVE $125</td>
<td></td>
</tr>
<tr>
<td>TM2570</td>
<td>Full 70watts output — latest most sophisticated 2M FM transceiver — no linear needed — SAVE $36 Plus the cost of linear $250</td>
<td>$659</td>
</tr>
<tr>
<td>TH21</td>
<td>World’s smallest Ultra Compact 2M Hand Held, 1W RF out — High performance —</td>
<td>$299</td>
</tr>
<tr>
<td></td>
<td>low price SAVE $36</td>
<td></td>
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<tr>
<td>TH41A</td>
<td>World’s smallest Ultra Compact 70cm Hand Held 1W RF Out — High performance —</td>
<td>$299</td>
</tr>
<tr>
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<td>low price SAVE $36</td>
<td></td>
</tr>
<tr>
<td>TM411</td>
<td>The Mini Mobile, 25 watts 2M Rig, 5 memo, tilting front panel. SAVE $40</td>
<td>$559</td>
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<tr>
<td>PS50</td>
<td>The new Station Power Supply, 20A at 13.8V SAVE $20.</td>
<td>$339</td>
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</tbody>
</table>

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DAY ORBIT number U.T.C. H.U. M.N. 10 20 30 40
0th August 212 2355 1942:45 -17 207 5 73 43 67 78 45
1st August 211 2357 1901:47 -19 170 14 76 23 60 35 48
2nd August 214 2259 1720:43 -19 170 56 63 71 52 90 32
3rd August 215 2221 1609:51 -19 179 66 55 79 43 95 23
4th August 216 2242 1558:53 -19 170 37 47 85 35 99 15
5th August 217 2247 1517:54 -19 181 34 38 90 27 105 7
6th August 218 2346 0257:26 -19 212 34 31 90 18 106 1
7th August 219 2347 1416:57 -19 211 7 21 69 10
8th August 220 2352 1151:11 -17 237 12 18 51 4 3
9th August 221 2227 0913:36 -19 259 255 2 261 43 272 52
10th August 222 2237 1153:07 -19 255 168 5 260 20 277 41
11th August 223 2238 2222:59 -19 265 18 260 29 284 50
12th August 224 2239 2251:41 -19 265 15 272 29 284 50
13th August 225 2240 2210:44 -19 261 275 34 225 45 54
14th August 226 2241 2129:46 -19 261 275 34 225 45 54
15th August 227 2242 2048:49 -19 251 221 43 254 54 333 72
16th August 228 2243 1922:52 -19 250 301 59 230 61 70
17th August 229 2244 1841:45 -19 242 331 59 254 70 57
18th August 229 2245 1715:10 -19 234 367 44 304 72 54
19th August 230 2246 1541:13 -19 227 401 59 244 71 57
20th August 231 2247 1340:01 -19 219 441 59 234 61 45
21st August 232 2248 1143:12 -19 211 481 59 224 50 37
22nd August 233 2249 0920:59 -18 201 507 59 214 46 28
23rd August 234 2250 0721:68 -18 201 507 59 214 46 28
24th August 235 2251 1440:11 -18 197 537 59 204 41 19
25th August 236 2252 2119:16 -17 192 560 59 194 35 11
26th August 237 2253 0155:45 -17 193 560 59 194 35 11
27th August 238 2254 1213:16 -17 193 560 59 194 35 11
28th August 239 2255 1820:16 -17 184 571 59 184 28
29th August 240 2256 0516:40 -17 179 582 59 179 19
30th August 241 2257 1122:51 -17 179 582 59 179 19
31st August 242 2258 1727:54 -17 179 582 59 179 19
OSCAR-10 APOGEES SEPTEMBER 1984

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From Keith ZL2BJ/RUA, we have an update on the demodulator circuit published in the June/July issues of this column. I also understand that Tim Miller G3R/V, is also preparing a suitable demodulator for this spacecraft along the lines of his now-advanced OSCAR-10 PSK Demodulator.

However, from Keith, we have the latest JAS-1 PSK demodulator "AF-DEMO" developed for receiving OSCAR telemetry. The circuit was simple, but the lock range was only ±100 Hz — adequate for a satellite like OSCAR-10 which is in a high orbit, but not very satisfactory for JAS-1 (because Doppler shift is relatively large). The "AF-DEMO" circuit described below uses a Costas loop PLL with lock range of ±200 Hz, and has "locked," input frequency low ("up") and high ("down") outputs which can be used to automatically correct the transceiver frequency ("up"/"down" outputs occur when the input frequency shifts about 100 Hz from 1600 Hz). A level meter can also be added. The VCO runs at 12.8 kHz, and is divided by eight; a shift register (74C164) gives the desired phase shifts. One adjustment is required: short JP8 operates as a voltage follower and its output quite as accurate as they appear. All those decimal places create a false sense of security.

The Keplerian Elements of 1000s of space objects are derived from frequent range and change-rate measurements, and are self-consistent to facilitate tracking for a very short time — a few days or satellites like OSCAR-10 are in nice stable orbits, so the elements appear to hold well for quite a while. However, when you take a close look at successive sets of Keplerian elements, you get quite a surprise.

Take Argument of Perigee; for OSCAR-10 we expect this to change slowly at an average rate of around 0.3 degrees per day — which indeed it does. But carefully plot a graph of Argument of Perigee against time and you will see the points jitter around the steady slope with a variation of some 0.2 degrees RMS. Individual points may be off-slope by as much as 0.5 degrees. So much for all those decimal places!

You can do the same exercise with RAAN, and the other quantity which changes continuously, Mean Anomaly. Steady parameters inclination, Eccentricity and Semi-Major Axis can simply be averaged. By plotting the graphs — or doing the equivalent manipulation by computer program you can reveal a Smoothed Ephemeris which has real accuracy and long term utility.

So, based on Keplerian element sets from May 1985 to May 1986, here is a set which I promise to May 1986, here is a set which I promise
equals Vref (6 V), and adjusts the 20 kohm "freq" preset so VCO output frequency is 12.8 kHz (1.6 kHz x 8).

A stable power supply is required.

**TESTING THE PSK DEMODULATOR**
The Manchester encoder described previously can generate a suitable PSK signal — replace the 1200 Hz clock with 1600 Hz. It is best with two TNCs, one generating a PSK signal and the other demodulating it. If only one TNC/modem is available, tape the (APSK) signal, and use monitor mode to receive it.

de Colin VK5Hi

**SATELLITE ACTIVITY FOR PERIOD APRIL 1 TO 23, 1986**

1. **LAUNCHES**
The following launching announcements have been received:

<table>
<thead>
<tr>
<th>Date</th>
<th>Object</th>
<th>Launching Announcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986-020A</td>
<td>Cosmos</td>
<td>April 26</td>
</tr>
<tr>
<td>1986-023A</td>
<td>Progress 25 April 21</td>
<td></td>
</tr>
<tr>
<td>1986-028A</td>
<td>Cosmos</td>
<td>April 28</td>
</tr>
</tbody>
</table>

2. **RETURNS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Object</th>
<th>Returns Announcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986-019B</td>
<td>Viking</td>
<td>April 26</td>
</tr>
</tbody>
</table>

3. **GENERAL**
Spacecraft 1986-019A SPOT-1 had the following orbit parameters:

- Period: 101.72 min
- Inclination: 98.7 degrees
- Apogee: 838 km
- Perigee: 815 km
- Transmitting Frequencies: 2205.900 MHz, 5745.000 MHz, 8253.100 MHz, 20.0W, 8307.100 MHz, 0.04W

Spacecraft Viking 1986-019B had the following orbit parameters:

- Period: 262.18 min
- Inclination: 98.8 degrees
- Apogee: 13544 km
- Perigee: 819 km

**CB ANTENNAE FOR 20 METRES**
Lionel Curling VK3NM/ZL1SW
18 Lexington Street, Vermont, Vc. 3133

With a few easy steps, convert your obsolete CB antenna for use on 20 metres.

Should you have, or are able to obtain a half-wave 27 MHz Station Master CB ground plane, it can simply be modified for use on 20 metres by removing the base-loading coil and replacing it with a shorting strap.

Slight pruning of the vertical element may be necessary to suit your preference of operating frequency. Further, you may also wish to consider replacing the orange PC conduit (base insulator) to a more suitable ultra-violet radiation resistant type.

**QSP**

**SO THEY SAID . . . 25 YEARS AGO!**

An amateur satellite? Preposterous! But West Coast amateurs have picked up a far-out suggestion by W6TNS in a CO magazine article and are gung-ho to build an Orbital Satellite Carrying Amateur Radio on two-metres. All we need is a piggy-back ride.

From QST February 1986, and contributed to AR by Steve Mahony VK3AN

Page 36 - AMATEUR RADIO, August 1986
VHF UHF — an expanding world

Eric Jamieson VKSLP
1 Quinns Road, Forrester, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY CALL SIGN LOCATION
50.010 JA2IGY Mele
50.020 JAGYBR Japan
50.025 VK4JYB Hornsby
50.075 V56SIX Hong Kong
50.109 J0T1AA Japan
50.013 P529PL Laidley Island
50.020 FK87B Noumea
50.100 ZK25IX Nue
50.050 VK8CA Patricia Island
50.200 VK8FB Darwin
50.250 ZL2VHM Manawatu
50.310 ZL2MHP Hornby
50.320 VK6RTT Port Samson (Karratha)
50.325 VK2RHV Newcastle
50.350 VK6KTB Karratha!
50.370 VK7RTST Hobart
50.425 VK2KGB Gunnedah
50.440 VK4NTL Townsville
50.445 VK4VR Mount Lofty
50.460 VK8RPH Perth
50.465 VK6RTW Albany
50.465 VK6KTH Laverton
50.485 VK8RAS Alice Springs
144.019 VK6QRS Bussleton
144.067 VK1MQ Mount Moonta
144.410 VK1KRC Canberra
144.420 VK2KBY Sydney
144.430 VK1WTO Glenelg
144.460 VK6RTW Albany
144.470 VK6WN Port Hedland
144.485 VK8RAS Alice Springs
144.550 VK5REB Mount Gambier
144.570 VK7LEB Port Lincoln
144.600 VK8RKT Port Samson (Karratha)
144.600 VK6VF Mount Lofty
144.650 VK6QV Sydney
145.000 VK6RPH Perth
145.000 VK2BE Sydney
145.057 VK6RBS Bussleton
145.180 VK6RPR Ninderry
145.410 VK6RTT Port Stanwell
145.420 VK2RSY Sydney
145.490 VK2RSY Sydney
145.490 VK6RPR Ninderry
1298.171 VK8RAS Alice Springs
1154.420 VK8CGR Port Lincoln
1000.000 VK6RBF Roleystone

1. From the pages of the West Australian VHF Group Bulletin for May 1986 comes a complete listing of all beacons and beacons included is VK6RTU, at Kalgoorlie. This was removed from the above list some time ago as no one could confirm that it was operating.

2. Gil VK3AUI, confirms the VK3RTG beacon is operating from Glen Waverley, on a high point with a good look-out in all directions.

Whilst on the subject of beacons, I have received a long letter from Peter VK3WY, which contains quite a deal of information on the state of VK3 beacons and some of their repeaters. Of interest to readers will be the following:

"The six metre beacon was operational during the first three years ago, when internal problems at the site (Mount Anakie) forced us to temporarily suspend operation; so the opportunity was taken to re-build the beacon. Lack of room at the site finally saw the beacon close down.

"The Club, in conjunction with the WJA, decided to purchase a suitable site at Mount Anakie. After two-and-a-half years of problems with state and local government and bureaucracy in general, a planning permit has now been issued by the local council. Plans for a building are in the hands of the Institute's draughtsman and it is hoped to have the necessary building permit within eight weeks, after which time construction will commence in earnest with a projected completion date of November 1986."
The four by 13 element two-metre array of Paul VK4AUR, in Brisbane.

Table: DXCC Countries based on information received up to June 15, 1986.

<table>
<thead>
<tr>
<th>Country</th>
<th>50 MHz</th>
<th>10 MHz</th>
<th>6 to 10 MHz</th>
<th>52 MHz</th>
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<td>VK60X</td>
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<td>VK3JQ</td>
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<td>VK46K</td>
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</table>

The minimum number of contacts confirmed for an operator to commence being listed is five, including VK.

The position on the list is determined by the number of confirmed contacts. Where two or more operators have the same total, those first data listed with that total can only be displaced by someone having a greater number of confirmed contacts.

The next list will appear in February 1987, and entries will need to be on my desk no later than December 15, 1986. Claimants are reminded that full details of all contacts are required: vis date of contact, time in UTC, call sign of station worked, country, mode, report sent and received, QSL sent and whether received, split frequency contacts should be indicated. Please add your own call sign and date of your claim.

I still reserve the right to ask any claimant for QSL cards to support verification if considered necessary.

Further entries are invited. The fact that you may not have worked as many countries as someone else should not stop you from entering. Someone has to be at the top and positions on the ladder do change from time to time. This time we see John VK4ZJB, moving into third place, he was formerly in position five, while Graham VK6GB, further consolidated his top position by adding two more countries with one more confirmation still to go to bring his confirmations to 42 countries.

Incidentally, it is interesting to note the call signs of the countries heard by Graham on six metres but which he was unable to contact. They were WA4TNVL7 on March 28, 1981; Z96LN on April 16, 1979; ZK5NW on March 11, 1979; KP4CL on April 3, 1980; ZK1AA on April 25, 1979; HI5YL on April 2, 1980; H8BDA on February 20, 1982; PJ3EE on March 23, 1982; EL2AV on April 4, 1982 and TI2NA on April 6, 1982. In addition, the following beacons were heard: ZB2/HF/19/11/81; P7U4R (on many occasions); OB4/13 (many occasions).

No stations were worked cross-band 10 metres to six metres.

**BEACONS OF THE WORLD**

Bill Tynan W3XO, in his QST columns The World Above 50 MHz for June 1986, carries a list of known beacons between 50.055 and 52.510 MHz. Of these, 56 are below 50.100, with a further 20 in our own area and New Zealand on 51 and 52 MHz. I feel that to give you a complete list of known operational SSB beacons for listing for future reference, but will defer the matter for the time being. I note there are no less than eight beacons listed for South Africa.

**GENERAL NEWS**

During May, I had the opportunity of meeting Gordon VK2ZAB, at his home during one of my travels. In his own area, the pangs of envy, situated as he is on the top of a hill at Berowa Heights, with an unobstructed 360 degrees view of the country-side. Just for an exercise, Gordon suggested it may be possible to speak to someone in Canberra, so he fired up on 70 cm and immediately has an S9 contact! Signals were even there from Melbourne and the night was not considered to have been enhanced in any way for propagation. Gordon is regularly in contact with stations over a large area of New South Wales and works into Brisbane as well.

The geographical position is such that it is a fact that Gordon does in fact have a very good site, but he is using it to advantage and by so using it is encouraging others to come on and have contacts, which is what is wanted. No stations were worked cross-band 10 metres to six metres.
with the now fairly frequent 747 flights. The flight would have to be such that the aircraft track crosses the signal path; ie Adelaide to Sydney flights are worth trying, but Adelaide to Johannesburg are not.

Gordon would be prepared to attempt contacts with anyone dedicated enough to try, but any reduction from the parameters listed above (the signal level according to 100 watts ERP is 6 dB down so signals would be S1. The distance also applies regardless of frequency; ie the same conditions apply on 70 cm as on two metres).

So there you are: the challenge is offered. I would like to try but my three degree horizon to the east makes it virtually impossible, but I am sure someone with a sense of humour placed the wording. As others, to give DXers a new country for their

Winter is nearly behind us and spring is in the offering, when one will be able to enjoy the sunshine. Now is the time to plan a check of your antennas before the spring and summer winds are upon us, also to see how the weather-proofing stood up to Melbourne, sleet, frost and at times during this QTH, the birds. The solar cycle should start to begin a climb to allow better DX after this year or early next year; although really the low was not as bad as I thought. One has had to search just a little harder for those wanted countries. It is a good time in a plea for reports and assistance with the column for a considerable time. However, I would like to see some more reports in the mail each month of what you, the reader, has been hearing or working, so that it may be passed on to your fellow DXers, not only in Australia, but world-wide as these notes are distributed to a number of overseas newsletters and magazines on a reciprocal basis.

So how about it ladies and gentlemen — some more information please for the column you read?

CONGRATULATIONS

The President of JARL, Shozo Haru JA1AN, was decorated by the Japanese Government in April.

This is a recognition of your contribution to the development of amateur radio as President of the JARL for 16 years. Part of the criteria for the award is that the recipient must have served an organisation for 15 years and be older than 58 years of age. JA1AN is 58.

On behalf of all DXers, congratulations and thanks for all you have done for amateur radio, Shozo.

BAROMETRIC CHANGE

As from May 1, 1986 the Australian Bureau of Meteorology has replaced the readings of barometric pressure from millibars to hectopascals (hPa) to include greater international standardisation of equipment.

The numerical value of each unit is the same — one hectopascal = one millibar and barometers may be read as before by just changing the wording.

Incidentally, this is not the first change as up to 1919, the barometric change was quoted in millibars due to the pressure change in a tube of mercury.

The change has been given very little publicity, but someone with a sense of humour placed the advertisement in a West Australian newspaper:

Approach. Marriage BARR-PASCAL: Mr and Mrs Barr are pleased to announce that on May 1, their daughter Millie will become Mrs Hector Pascal. Congratulations Millie.
year on the island counts the same as their compulsory National Service.
I think I know which alternative I would be taking if placed in a similar predicament — learning to become an amateur, passing the exam and putting my name down fast.

**4U1VIC AND THE HEAT IS ON**

The controversy over whether 4U1VIC should have separate country status for the ARRL DXCC Award is unfortunately heating up. Reprinted below is the Editorial from QST, the monthly journal of the **Osterreichischer Versuchssenderverband (OVSV).**

"You will remember that we (the Austrians) have already announced several times in QST that 4U1VIC could become recognised for the status of a separate DXCC country. Logically, as the Vienna International Centre is an extra-territorial area and is recognised as the third centre of the United Nations, the analogy with the territorial area and Is recognised as the third state for 4U1VIC could become recognised for the ARRL DXCC status for 4U1VIC. As this appeared to riot be the case we then changed to apparently exclude 4U1VIC.

"We feel that this is a special insult in that ZC4 was recognised as a country under conditions not unlike that of the United Nations. We do not really know what is behind this action. It is certain that some American amateurs have voiced their opinion to the ARRL, but unfortunately without success.

"In his justified rage over this matter, the first President of the Vienna International Club, Dr Horst Eisenlohr O3SO (ex D9SLQ), in a personal protest to the ARRL actions, has returned his DXCC No. 5972. It is not surprising that this scientist, with almost 25 years in the service of the United Nations, is beginning to doubt if the previously so exemplary ARRL is still what it once was.

"We can, as the OVSV, only give our amateur friends at 4U1VIC, our moral support. It is hoped that someone at the ARRL will begin to understand that the ARRL is digging its own grave, in that it is destroying its own international reputation, as well as that of the DXCC.

"Apparently a deserted island of rocks with often a doubtful country relationship has more weight than a internationally recognised major location of the United Nations. Maybe an American DXpedition to 4U1VIC, sponsored by a well-known DX Association, could bring much public exposure.

"Please help to promote democratic conditions in this matter: in QSO with Americans, ask them when the ARRL will finally grant DXCC status to 4U1VIC.

"Signed: Dr Ron Eisenwagner O3SREB,
President, 
Osterreichischer Versuchssenderverband (OVSV).

My personal comment is that I don't think I am qualified even with all the facts at hand, to make judgment of who is right or wrong but I do have one question, why was Rule 5, which encompasses this problem, changed after 4U1VIC's application was purportedly submitted for consideration? What is fair to one is fair to all and as I have previously noted in this column, either allow 4U1VIC in or delete all the others that do not meet the criteria as the wording now stands.

**ANTIPODES**

Tony K7AF, a member of the WIA, had the pleasure of a visit from Graham VK0GC. Graham is presently visiting Antiques in a Camper Van.

Tony's OTH is Kodiak Island, which is very close to being the antipodes of Macquarie Island, where Graham was located. It is thought that they did have a QSO during Graham's stint on the island, but it is not known for sure.

**A LITTLE HUMOUR**

Ever been in a big pile up or a net operation for a rare station? The stations before you are giving the much wanted station their families life history. Well a poem written by W4UR for QO magazine sums it all up in saying:

Surely there's a special place in hell,  
Full of chains and whips of heavy leather,  
For those in a pile-up, contest style,  
Must send name, address and current weather.

Operators, one and all, remember this the next time you get to work that much wanted station please — because I might be next in line!

**SENEGAL**
The following Senegalese prefixes represent the 'counties' as follows:

- 6W1 — Cape Vert
- 6W2 — Casamance
- 6W3 — Diourbel
- 6W4 — Felleu
- 6W5 — Senegal Oriental
- 6W6 — Sine-Saloum
- 6W7 — Thies
- 6W8 — Loga

**A PUZZLE OR CONFUSION?**

Bob Winn W5KNE, Editor of QOZ DX poses the following . . . "Here is an interesting puzzle, the Golan Heights, a 400 square mile plateau, which was originally a part of Syria, was captured by Israel in 1967, and annexed by Israel in 1973, it is patrolled by United Nations peace-keepers, but for DXCC purposes it counts as Syria." Personal comment is that I don't feel I am in the mood to solve this.

**soviet union**

Soviet Union amateur prefixes can be a mystery. Following is a list of prefixes and to what area they denote:

- RA, RN, RV — Russian SFSR
- RW, RZ — Russian SFSR
- UA, UJ, UV — Ukrainian SSR
- UW, UZ — Russian SFSR
- RB, RT, RY — Ukrainian SSR
- UB, UJ, UY — Byelorussian SSR
- UD, UJ, UY — Azerbaizhan SSR
- RU, UF — Georgian SSR
- RH, UH — Armenian SSR
- RI, UI — Uzbek SSR
- RJ, UJ — Tadzhik SSR
- RL, UJ — Kazakh SSR
- RM, UJ — Kirghiz SSR
- RO, UO — Moldavian SSR
- RP, UF — Ukrainian SSR
- RJ, UQ — Latvian SSR
- RR, VR — Estonian SSR

**from L to R: Philip VK3KAC, Peter VK3DX/KD, P29PW, Susan VK3PSO and John VK3CWY/P29JW.**

**a family profile**

It is not uncommon these days to find family groups with a common interest in Amateur Radio. One of the wonderful concepts of our hobby is the way it caters for such a wide variety of interests within the overall context. This family finds the radio to be an excellent means of keeping in touch with other — sunspots and band conditions permitting.

It all started in 1950, when John, encouraged by Brian VK5CA, gained his AOCP and became VK5WY. John at present is the Senior Mining Engineer for Bouganville Copper Limited in Panguna, Papua New Guinea and he finds time for other varied interests such as photography, sailing, silversmithing and is a keen 'home brewer', an interest he shares with his son Peter.

Peter, (Sue's husband and John's son-in-law), is an electrical engineer with the State Electricity Commission in Victoria, at the Hazelwood Power Station located in the Latrobe Valley. They live on a small farm overlooking the valley, where they breed sheep. Philip's other interests include photography and apiculture and Philip finds time to live an active member of the volunteer Country Fire Authority.

Sue is a librarian, teaches Indoniesian studies and craft and has other interests such as reading, needlework and gardening. Both Sue and Philip enjoy bushwalking and cross country skiing when time is available.

Peter's life is electronics, and he is a keen constructor who enjoys discussing his projects whilst talking to his father in Panguna and is studying Electronics Engineering in Melbourne.

John is still hopeful that his youngest daughter Cathy, will take up the hobby. Cathy has passed the CW, but has temporarily 'relaxed' on her theory studies due to pressure of examinations of her final year at High School.

John's wife Noreen and the other members of the family tolerate the hobby patienty, John admits, but they have many varied interests in the art and craft field, showing very little inclination to the pastime we all enjoy.

**BITS AND PIECES**

Phil VS6CT hopes to be operational for a short stint from KP2 this month. * * * Mike 9U5JB, Jim 9U5JB/Bullington, went ORT on July 7. Where will he become Ambassador next? * * * RFOFWW, runs a net on Wednesday and Friday of each week on 14.195 MHz. * ' Visiting Japan late this month — then don't miss the 'Amateur Fair' and the Tokyo DX Convention in Tokyo on the 22, 23 and 24th, which will be held at Harumi. Market Reef could have a really different face for future DX O/JO, for other varied operations. * Some JA operators are keen to operate ZA with the assistance of BY operators this year. A possibility? * * * Manola 3C1MB, is still quite active from Equatorial Guinea. If you are
MEMBERSHIP

I hope all members have been giving serious consideration to the Discussion Paper, which was published in February’s AR. There has certainly been plenty of talk about the things that were mentioned over the years, generally seen in letters to the editor.

I wonder now many WIA Divisional Councils receive notes from clubs and individuals telling them what to do.

There is really no need for any of us to do that. The WIA Executive is US. We have to tell them what we want so that they represent us when dealing with the rule makers. What you, the members, decide today could affect your hobby for years to come, so make sure you understand all the arguments before giving your vote.

I am still undecided and keep dwelling on the idea that it would be fine to encourage the use of computer and new technology, but it is a very different thing to make available parts of the spectrum for computer operation. As an amateur radio society maybe we should put the radio part first, by keeping the standards reasonably high.

Perhaps the computer hobbyist group is not the same gold-mine that the CB groups were to amateurs and radio clubs, and we should stop looking for our laziness in recruiting new blood.

My suggestion, this month, for every WIA member is to make it his or her goal to put in an application for membership this year. And if everyone enrolled an already licenced amateur we would have 100 percent representation!

It is important to recruit your member is to talk with him/her and find out what they want from amateur radio. Provided you know what the WIA has to offer, you can highlight the advantages.

The main advantage is, of course, representation — there is a benefit in numbers when negotiating with the authorities.

But, most people say, “What’s in it for me?” those who have been previous members.

Aside from the fact that ‘you get out of it what you put in’, there are still a few special advantages.

For example: Repeaters, Amateur Radio magazine, Disposals and a correspondence school at a lower cost than the usual price. Look up the advantages yourself, here are a few more...

* Denotes CW operation.

AINAGURATION DATEs OF Radio Societies

WIA Australia 1910
RS5 Uganda 1971
ARRL USA May 18, 1914
CRRL Canada 1920
SRA Singapore April 14, 1920
RCA Argentina October 21, 1921
RCR Chile July 12, 1922
GRC Ecuador May 9, 1923
USA Bermuda May 1923
REF France April 25, 1925
SARL South Africa May 17, 1925
SBB Sweden September 1925
OSVS Austria April 28, 1926
RCD Dominican Republic June 12, 1926
JARL Japan June 12, 1926
NZART New Zealand August 16, 1928
ARJ Italy January 1, 1927
EDR Denmark June 27, 1927
DARC Federal Republic of Germany 1927
NRRL Norway August 8, 1928
USKA Switzerland August 4, 1933
HARTS Hong Kong October 29, 1929
PZK Poland February 3, 1932
RCP Peru December 6, 1933
LMR Mexico January 10, 1932
PAUL Philippine November 1933
IRTS Ireland January 1934
LCB Brazil February 2, 1934
CORA France Polytechnique 1934
FRR France 1934
RL Luxembourg March 7, 1937
JARA Jamaica February 17, 1939
RCP Bolivian February 17, 1939
RCP Paraguay January 23, 1941
CREN Nicaragua September 15, 1941
VERON Netherlands October 21, 1946

FROM: ARRL News, April 1996

AMATEUR RADIO, August 1986 - Page 41
Following are the results of the 1985 VK/ZL/O Contest. There was certainly a full in propagation, particularly over the phone weekend. This was the 50th running of the contest and also celebrated the 75th Anniversary of the WIA. To commemorate these events, the WIA Executive provided special awards in the form of medallions for the winners of the contest.

In addition, Fred Mackiewicz, of Am-Comm Electronics, provided a special prize of an Antenna Rotator to the top Australian scorer in the contest. There was certainly a lull in propagation, particularly over the phone weekend. This was the last year as VK/ZL/O Contest Manager. I can hear cheers of joy from many, but to those who are cheering I ask this one question — where were you when no one could be found to do the job? I have enjoyed the experience, but did not appreciate the amount of work involved and would not recommend the job to anyone who has a similarly hard and other commitments.

To those who helped me and sent encouraging comments; thank you. To those who sent criticism and other comments, thank you for appreciating that too, for it told me how people felt and thought. To those who hassled a whole lot of people, including abusive phone calls to my wife, no thanks at all! If you have a grievance with me, talk to me, not others who have no control over what is happening.

Now to the results. The call signs in bold type indicate that there was little competition or little effort required, no award has been made. A station can receive only one award for each mode. The numbers in the "band" column are the number of contacts followed by prefixes, see the rules on page 22, September 1985, Amateur Radio for the method of calculating the final score. The DX results should be in next month’s AR and once they and the awards are out, I look forward to having some operating time again.

All check logs will be acknowledged with the DX Results.

SOAP-BOX
Propagation conditions on 14 MHz and the number of stations operating were most disappointing — VK3ABC
Where was 10 metres? Found that the quad got into the television on 15 metres just when the band opened to Europe and the wife growled — VK3MID
High notes and QRN resulted in reports like 3991 — VK3AMD
Conditions were very bad ... only entered to show appreciation for running the contest — VK4BRZ
Not a good contest this year, last time due to over sleeping, power failure, solid QRN and then conditions were atrocious ... I quit with a splitting headache — VK4AO
Strange that nobody was heard on 160 metres — ZL1BVW
Had expected more activity from VK/ZL on 160 and 80 metres — ZL1BN
I only started to give out a few numbers, but the excitement and enjoyment increased — ZL6BDG (Welcome to contesting).

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**INTERNATIONAL NEWS**

**INTERNATIONAL TRAVEL HOST EXCHANGE**

The number of participants in the IARU International Travel Host Exchange program is expanding. The latest list received from the ARL International Programs Manager, Naoki Akiyama, caulfield South, Vic. 3162, to the Federal Secretary, WIA, PO Box 300, Mount Cook (New Zealand's highest mountain) is published below. Members of the ITHE program are willing to exchange information or to host visiting amateurs. If you would like to participate in this program or desire further information, please write to the Federal Secretary, WIA, PO Box 300, Mount Cook, New Zealand, or the International Programs Manager, Naoki Akiyama, caulfield South, Vic. 3162.

5. Ciphers: Five or six digit numbers composed of the RST report plus a three digit sequence number beginning at 001 and increasing by one for each QSO on that band.

6. Logs: Separate log sheets should be used for each band and for SSB/CW.

Logs should contain: Date, Time in UTC, Call of Station Worked, Ciphers sent and received. Attach one new VK/ZL prefix for the call. State QSO points claimed for each band. State VK/ZL prefix claimed for each band. Attach a Summary Sheet showing: Call Sign, Number of Contacts, Total QSO Points Claimed on all bands, Total VK/ZL Prefixes Contacted on all bands. Total Points Claimed and a declaration stating that all rules were observed.

Logs should be posted to NZART Contest Manager, ZL2GX, 152 Lytton Road, Gisborne, NZ, to arrive prior to February 15, 1987.

7. SWLs: A VK/ZL station must be heard in a contest QSO. Logs are to be set out as for the following section.

8. Awards: Separate awards will be issued for SSB and CW.

a. A plaque for the top scorer in each continental area.

b. Special large coloured certificates showing Mount Cook (New Zealand's highest mountain) will be awarded to the top scorers in each country.

c. Participation certificates will be awarded in all other countries — one IRC for postage, a copy of rules and results are available upon request — one IRC please.

FOR VK/ZL STATIONS

Check with overseas rules. Rules 1, 2, 5, 6 as for Overseas Stations. Exception... Rule 6.

3. VK/ZL stations are permitted to contact each other only on 160 and 80 metres. VK/VK; ZL/ZL stations are those which qualify as Oceania for 1986.

7. SWLs: A VK/ZL/O station must be heard in a contest QSO. Logs are to be set out as for the following section.

8. Awards: Separate awards will be issued for SSB and CW.

a. A plaque for the top scorer in each continental area.

b. Special large coloured certificates showing Mount Cook (New Zealand's highest mountain) will be awarded to the top scorers in each country.

c. Participation certificates will be awarded in all other countries — one IRC for postage, a copy of rules and results are available upon request — one IRC please.

FOR VK/ZL STATIONS

Check with overseas rules. Rules 1, 2, 5, 6 as for Overseas Stations. Exception... Rule 6.

3. VK/ZL stations are permitted to contact each other only on 160 and 80 metres. VK/VK; ZL/ZL and ZL/VK contacts are all permitted on these two bands

**Notes:**

- **VK ZL OCEANIA DX CONTEST — Rules 1986**
- **International Programs Manager, Naoki Akiyama, caulfield South, Vic. 3162, to the Federal Secretary, WIA, PO Box 300, Mount Cook, New Zealand.**
- **International News**
- **International Travel Host Exchange**
- **International News**
- **INTERNATIONAL TRAVEL HOST EXCHANGE**
- **The number of participants in the IARU International Travel Host Exchange program is expanding.**

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**Links:**

- [International News](#)
- [International Travel Host Exchange](#)
- [Note: Oceania](#)
- [Rules for VK/ZL/O](#)
- [DX Contest - Rules 1986](#)
- [Notes](#)
CONTEST CALENDAR

AUGUST
2-3 Tenth WA Annual 3.5 CW Contest (Rules this issue)
9-10 European CW Contest (Rules this issue)
16-17 Remembrance Day Contest (Rules July issue)
16-17 New Mexico QSO Party
16-17 SEA-net SSB Contest (Not Official, see below)
23-24 Asian CW Contest (Rules June issue)

SEPTEMBER
6-7 Tenth WA Annual 3.5 SSB Contest (Rules this issue)
13-14 Scandinavian CW Activity
20-21 Scandinavian CW Activity
27-28 Scandinavian SSB Activity

OCTOBER
4-5 VKZL Oceania Phone Contest (Rules this issue)
4-5 IRQA World Championship
11-12 VKZL Oceania CW Contest (Rules this issue)
15-17 YLRL Anniversary CW Party
18-19 1986 Fall CW Contest (Rules this issue)
19-20 CARTG RTTY Contest
25-26 CO WW DX Phone Contest
29-31 YLRL Anniversary SSB Party

NOVEMBER
8-9 Australian Ladies Amateur Radio Association Contest
8-9 European RTTY Contest (Rules this issue)
29-30 CO WW DX CW Contest

CONTEST DISQUALIFICATION CRITERIA

A standard approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

A perusal of these criteria will show them to be quite fair and well thought out. They are based on those used by the ARRL in administering their contests. It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows:

DISQUALIFICATION — An entry in WIA contained contests may be disqualified if, upon checking of logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies. An entry will be disqualified if more than two duplicate QSOs are detected as being mis-called or misspelled. For each duplicate or mis-called or mis-spelled call removed from the log by the Contest Manager, a penalty of one percent. Score reduction does not include correction of arithmetic errors.

EXCHANGE — RS/T, plus a three figure QSO number starting with 001.

SCORING — Stations outside SEA-net area: Contacts with stations within the net area following prefixes — 20 points on 160; 10 points on 80 and 40, four points on 20, 15 and 10 metres. Prefixes: DJ, DL, DK, DK6, DL1, DK9, ZP, ZU, ZW, ZL. Contacts with stations outside the net area: 10 points on 160; five points on 80 and 40; and two points on 20, 15 and 10 metres. Contacts between stations outside the net area have no value. There is a multiplier of three for each net country worked.

Stations within SEA-net area: Contacts with stations outside the net area — 10 points on 160; five points on 80 and 40; two points on 20, 15 and 10 metres. Contacts between stations within the net area: six points on 160; three points on 80 and 40; one point on 20, 15 and 10 metres. Contacts with stations in own country have no value. There is a multiplier of two for each net country worked; and three with country outside net area.

FINAL SCORE — Total QSO points times the sum of the multiplier for net country, plus the multiplier for country outside net area.

AWARDS — The three highest scoring stations on CW and on SSB will receive plaques. There are other awards for each class.

ENTRIES — Entries must be received no later than October 20, by the CEBU Amateur Radio League, PO Box 304, Cebu City, Philippines 6040.

SEA-net AREA PREFIXES — A35, A51, AP, BV, HD, HD1, HD2, HD4, HD6, HA, H2, JC, KC, KE6, KH2 to KHO, KX6, P29, S2, S79, T2, T3, VK all, VO9, VQ, V56, VU2, V7J, XV, XE5, XW8, XX8, XX2, YB, YO8, ZK, ZL all, 36, 7, 8, 3D2, 457, SW1, 8Q7, 9M2, 6, 8, 9N1, 9V1 and 1ZS.

As Federal Contest Manager, but that I have a duty not only to make out rules, check logs and carry out all the other mundane tasks which are the lot of the Contest Manager, I believe that I must undertake other activities in connection with this office.

The Contest Manager should do as much as he can to encourage the operators of the more expert on contesting in its various forms. He should be available as a resource to other officers of the Institute and be able to provide sound and informed advice when it is needed.

Such matters as helping to formulate policy, making suggestions as to what actions should be carried out to improve contesting for the benefit of all amateur radio operators, correspond with the authorities, others, including the Federal Office and Councilors, and doing my best to promote discussion amongst members on contest matters are all part of the job.

In these notes you will read of others opinions on contest matters and also some personal opinions of my own. I would like to see this column become a forum for informed and logical discussion of contest matters and other subjects allied to amateur radio, apart from the privilege we have of expressing opinion through Over to You!

I am aware of the defauling, in late May I circulated a Discussion Paper dealing with various aspects of VHF/UHF operation in contests. I now provide a copy of that paper with the intention that anyone interested in what is going on with the Contest Manager and what is being suggested. Copies of this paper were forwarded to all Federal Councillors and the Federal Executive.

VHF/UHF ASPECTS OF CONTESTS — A DISCUSSION PAPER

It is suggested that we look at the history of contests with Australia and see just what has occurred with regard to VHF/UHF participation.

NATIONAL FIELD DAY
Following WWII, this contest was instituted with HF operation being utilised. Later as VHF operation became easier to achieve and, thus more popular, such operation was added. Problems have existed with this situation and various attempts have been made to overcome them.

As VHF was obviously not a popular aspect of the Field Day, I deleted the VHF-Only Section from the contest. At the same time, I made an attempt to attract contest participation by including, for the first time, some form of provision for multipliers for distance worked on VHF. I received a fair amount of criticism for this approach, which, upon consideration, was possibly justified. Together with the related problem of reinstating VHF as a separate section, the application of multipliers for distance concept was retained. This resulted in a minimal increase in entries in the VHF section.

Thus it can be seen that problems exist with VHF included in this contest and that the action taken does not solve the problems that exist.

REMEMBRANCE DAY CONTEST
This contest was inaugurated as a HF contest only. VHF was added. Now HF and VHF are separate categories. This approach may have solved the difficulties which have existed although there does appear to be less interest from VHF-only operators in this contest.

This contest should remain as it is, at least for the present.

Ron Henderson VK1RH, is currently looking at some of the other aspects of this contest.

ROSS HULL MEMORIAL CONTEST
This contest was introduced during the summer period in which the best VHF/UHF propagation conditions might be expected. As a general contest it received very little support.

It became apparent that this contest is an exercise for home stations which are highly specialised in the field of VHF through to microwave frequencies. These stations are generally fairly elaborate with large antenna systems and a wide range of equipment. The contest in its present form is virtually an "elites contest".
There have been many changes to the rules over the period of years in attempts to make it more attractive. Such attempts have resulted in still no more a sense of fair play or justice to the various Federal Contest Managers concerned.

There have been many complaints received regarding the unfairness of the rules and scoring systems, that it is biased towards particular geographic locations, is only for specialists and operators who can devote days of operation to the contest, etc. etc. The Federal Contest Manager has suggested in his report to the 1985 and 1986 Federal Conventions that consideration should be given to discontinuing the Ross Hull Memorial VH/UFUHF Contest in view of the minimal support received.

It is understood that Joe Gelston VK7JG, who is the VK7 Federal Councillor, may be looking at this problem.

SUGGESTION

I would suggest that difficulties mentioned above should be overcome by completely changing the approach to VH/UFUHF Contest Sections as follows:

1. Delete VHF from the John Moyle Memorial Field Day Contest altogether.
2. Delete the Ross Hull Memorial VH/UFUHF Contest from the calendar in its present format.
3. Implement a totally separate VH/UFUHF Field Day Contest (ARRL and RSGB do this) and use this as a basis for the Ross Hull Memorial Contest.

This "new" contest should appeal to the majority of keen VHOP operators and contestants and would allow entrants to participate on any scale they wished. The contest would be renamed the Ross Hull Memorial VH/UFUHF Field Day.

This document is circulated at this stage for discussion purposes and comment only. It is proposed also, that details of this paper be included in the Contest Column in Amateur Radio for discussion purposes and comment only. It is well for many years. I would repeat my recent comment that I feel strongly that the WIA should do something about it, when many cases I have noted of not only inaccuracy, but downright deception and distortion of the truth. Some of this may be caused by ignorance of the facts, or lack of information, but it is also caused by conditioned or excused. In other words, do your homework first!

Well, that should be enough of the "soap-box" approach for today, and if I feel strongly about our hobby and the need for us to be united in our efforts, hence my comments from time to time along these lines. I also feel strongly about morality and truth. Some of these values are sacrificed for commercialism and expediency.

HF CONTEST CHAMPIONSHIP

I have not been providing progress scores for this competition due to the limited amount of time available to me. My personal feeling is that where operators who offer support for this contest as well as severe criticism of the various Federal Contest Managers concerned.

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HF CONTEST CHAMPIONSHIP

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apart from me odd wipe with a soft cloth).  

HF CONTEST CHAMPIONSHIP RULES  
This contest championship competition will be conducted on an annual basis.  
To be eligible for this competition entrants must have entered at least three of the four HF contests sponsored by the Wireless Institute of Australia each year.  
A perpetual trophy will be awarded to the entrant with the greatest number of points gained under the terms listed below.  

CLASHING CONTESTS  
I recently received a telephone call from Don VK5NOD, who pointed out an anomaly in my notes in the June column.  
In the Contest Calendar I had shown the All Asian Phone Contest as being held on June 14-15, while the rules printed in the same Calendar showed the contest being June 21-22.  

Certificates  
It was during last year that I was able to catch up with some of the triple-certificate holders of the award, who can give out 46 points per contact on all bands. You can soon find yourself in a position to be able to help by giving out points to DX stations.  
Personal, I am finding this particular approach to be quite appealing, as it is a new way of doing things and which might catch on elsewhere, almost as much fun as straight contesting.  
Anyway, give it a try for yourself.  

JUBILEE 150  
You have no doubt read, or heard, about the J150 Award which can be gained by working the required VK stations and amassing the needed points to gain this award.  
With the year half-way through this award seems to be quite popular and
contacts will count for points. Each time the contact for WA stations will take the form of an identification mark followed by five characters consisting of RS and Shire letters; eg a station in Northam sends 579NM or if in Harvey 759HY, this helps towards the Worked All Shires Award. Eastern states and overseas stations send RST +1 plus a running number start at 001.

LOGS: Contest logs are to be set out on one side of a quarto or foolscap sheet with columns headed as below:

| DATE: |
| CALL: |
| OPERATOR: |
| TIME |
| CALLING RS |
| STATION |
| OUTFN |
| LETTERS |
| SHIRE |
| MULTIPLIER |
| POINTS |
| UTC |
| QSO |
| CLAIMED |

Column seven to be totalled at the foot of the each page and the running totals brought forward. The contest contains the following summarizing total number of points scored, Input power, Equipment and Antennas used, along with comments on the contest in general.

All logs to be addressed to WAA Contest Committee, 42 Kennedy Street, Melville, WA. 6156 and posted so as to reach the destination not later than October 10, for both contests. The results for both contests will be published in December's issue of Amateur Radio.

SHIRE LETTERS

| 1. Albany Town | AT |
| 7. Busselton | BS |
| 2. Albany | AL |
| 8. Bunbury | BU |
| 3. Armadale | AR |
| 9. Carnarvon | CA |
| 4. Avon Valley | AV |
| 5. Busselton | BS |
| 6. Burt | BU |
| 10. Boyup Brook | BB |
| 11. Brookton | BK |
| 12. Brookton | BK |
| 13. Broome | BR |
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European DX Contest

The Deutscher Amateur Radio Club (DARC) invites all amateurs to participate in this contest.

Periods — The contest is held over three weekends: CW: August 9/10; Phone September 13/14; and RTTY November 8/9 — from 0000 UTC Saturday to 2400 UTC Sunday.

Bands — 3.5, 7, 14, 21, 28 MHz.

Classification — Single operator, all bands; Multi-operator/Single transmitter — stations are only allowed to change band one time within a period of 15 minutes. A quick band-change and return for working new multipliers is allowed.

Rest Period — Only 36 hours of operation out of the 48 hours are permitted for single operator stations. The 48 hours of non-operation may be taken in one, but no more than three periods at any time during the contest and have to marked in the log.

Exchange — A QSO QSO can only be established between a non-European and a European station. Exchange the usual five or six digit serial number RST report plus a progressive QSO number starting with 001.

Points — The multiplier for non-European stations is determined by the number of European countries worked on each band. Europeans will use the last ARRL countries list. In addition each call area is considered as a multiplier: JA, PY, VE, VK, ZL, ZS, UA90 (see special regulations for RTTY).

Each WX-state is considered a multiplier, but no WX7 prefix.

The multiplier on 3.5 MHz may be multiplied by four.

The multiplier on 7 MHz may be multiplied by three.

The multiplier on 14/21/28 MHz may be multiplied by two.

Scoring — The final score is the total QSO points plus QTC points multiplied by the sum total multipliers from all bands.

QTC Traffic — Additional point credit can be realised by making use of the QTC traffic feature. A QTC is only a report for a checking for each station reported (note special regulations for RTTY).

(a) A QTC contains the time, call and QSO number of the station being reported; ie 0000/DA1AAV134. This means that at 1300 UTC you worked DA1AAV and received number 134.

(b) A QTC can be reported only once and not to the originating station.

(c) Only a maximum of 10 QTCs to a station is permitted. You may work the same station several times to complete this quota. Only the original contact, however, has QSO point value.

(d) logs containing reports of QTCs sent. QTC 3/7 indicates that this is the third series of QTCs sent and that seven QSOs are reported.

Contest Awards — Certificates to the highest scorers in each country, and that seven QSOs are reported. Each WX-state can be considered as a multiplier: JA, PY, VE, VK, ZL, ZS, UA90 (see special regulations for RTTY).

VI5JSA TO CELEBRATE COUNCIL CENTENARY

John Hampel VK5SJ

16 Mitchell Street, Glengowrie, SA, 5044

The WIA SA Division will operate a Special Event Station with the theme ‘Service to the Community by Amateur Radio’ to mark the centenary of Marion Council, which is celebrating ‘A Century of Service’ as a Jubilee 150 event in South Australia. The District QSL card proclamation was announced on September 2, 1866. It has grown to a population of over 70,500, covering the south-western Adelaide suburban area with extensive industrial development on the southern boundary.

As part of the South Australian Jubilee 150, Marion is sharing exchanges of historical material and personal visits with its J510 twin town, El Paso in Texas. On September 2, a series of projects and greetings on 14 MHz is planned between Mayor Hodges of El Paso and Mayor Hodgson of Marion.

On the same day, VI5JSA will be used to receive messages of congratulations from Mayors of South Australian country towns, who will speak via amateur radio through a network of VK5 stations who are part of the project. These exchanges will take place on 3.500 MHz prior to the Councils Centenary Meeting in the evening.

The Special Event Station will include extensive historical displays of communications equipment and documents at the Marion Library. The organisers and the Council anticipate the operation of the Special Event Station will attract attention to the roles of the Amateur Radio Service in the community.

VI5JSA will operate during library hours from August 26, to September 5, 1986, Monday; Wednesday; Friday 0001-1030 UTC and Tuesday; Thursday 0001-0730 UTC. Jubilee frequencies will be used; ie SSB — 3.568; 7.036; 14.186; 14.286 and 21.186 MHz. CW — 3.536; 7.036; 14.136 and 21.136 MHz. There will also be RTTY operation on 7 and 14 MHz. Local VHF and TV will also operate. A special JSA QSL card will be used and a Marion Centenary Award will be issued. Further details of this award will be in the Awards Column next month.

The organising committee would be pleased to hear from VK5s who would be able to assist during the operation of the Special Event Station, VI5JSA.

The Marion Council Centenary J150 Amateur Radio Co-ordinator is John Hampel VK5SJ, phone (08) 295 6751.
Well, here we are in the depths of winter, definitely not the time of year for experimenting with aerials, etc. Never mind, we can still get the transceiver and the radio shack warmed up and find someone to talk to, even when propagation is at its lowest ebb.

RAG-CHEWING A LOVELY WAY TO SPEND AN EVENING
A little rag-chewing on the lower bands is a good way to pass the long evenings, and it is always pleasant to meet-up with old friends again for a chat, somewhat akin to “yarning with a neighbour over the back fence.”

Perhaps we YL operators do share a special bond of friendship having its roots in the days when the main YL function was to provide sustenance for the OMs at social gatherings. Now-a-days, YL participation in amateur radio is firmly established and our members are steadily growing.

HOW DID ALARA BEGIN?
So how did ALARA, (or LARA, as it was known then), begin? I cannot vouch for the veracity of the following, and our historian, Mavis VK3KS, has written an excellent account which is doubtless closer to the truth, but it could have happened this way:

Some ladies met and said “You know it really is a bore,
To be stuck with kids and washing-up and every kind of chore.
Being XYLs of amateurs is really not so good
When they are working radio while we’re preparing food!
We can’t beat ‘em, so let’s join ‘em, get some action of our own,
And a group of us together can do more than one alone”.

So they formed a ladies’ amateur group, and soon
The OMs knew
They had competition on the air as LARA grew and grew.
Now things are very different, as all will soon agree,
And the YL role has changed a lot since LARA came to be;

So while YLs work the radio at all the social “dos”
The OMs are baby-sitting while they tend the barbecues.

In case any of our long-suffering OMs feel they are getting a raw deal, I would hasten to add that we are very appreciative of their continued support and encouragement in the hobby we all enjoy — amateur radio.

WIA ANNIVERSARY MEDALLIONS
Unfortunately, we omitted one recipient of the WIA 75th Anniversary Medallions (see June AR):
Joan Sutherland VK3NLO, — organisation of the Bendigo Premier Town Award and running the net.

Sorry about the oversight, Joan, and congratulations.

During February 1986, Jenny VK5ANW, presented Marlene VK5QO, with her 75th medalion on behalf of the VK5 Divisional Council, at the home of Meg VK5AOV and David VK50V.

Jenny VK5ANW, presents Joy VK5YJ, with her 75th medalion on behalf of the VK5 Divisional Council at the VK5 YL get-together.

MEMBERSHIP UPDATE
Following are amendments to the Membership List, as printed in July AR.
Associate Member for VK5 — Christine Taylor. Christine is a new member and we welcome you, Christine.
Associate Member for VK3 and VK6 — Rita Ashbury and Peggy VK6NKU. Both have re-joined and we welcome you both back, Rita and Peggy.

UPGRADED
Bron ex-VK3NTD/XTD is now VK3DYF and Josie ex-VK4VAN is now VK4VG. Congratulations on the new call signs, Bron and Josie.

South Australian YLs get-together at the home of Meg and David, VK5AOV and VK50V. From left: Denise VK5YL, Marlene VK5QO, Judy VK5BYL, Jenny VK5ANW, Joy VK5YJ and Meg VK5AOV.

South Australian YLs get-together at the home of Meg and David, VK5AOV and VK50V.

“...Guess who? ...”
AWARDS ISSUED RECENTLY

WAVKA
1479 Kazunuma Kawase JG3HPL
1480 Akifumi Takahashi JATAER
1481 Koichi Mori J7FWA
1482 Masayoshi Wakiya JA8CAQ
1483 Eduard H Pandoe YC2AFP
1485 Hidetaka Igarashi YB4FN

DXCC PHONE
344 Bob Millgate VK4ADZ
345 Warren T Cure VK7CV
346 Tom D Dowling VK4OD

CORRECTION
The call signs of the club station for the Brisbane ARC Inc are VK4BA and VK4WIL.

THE ARANC CACOUW AWARD
New Diploma Colour
This diploma is offered to DX stations outside New Caledonia.

1. DX stations shall work six New Caledonia stations.
2. Contacts from January 1, 1972 or after are valid for this award.
3. Contacts may be made by CW, SSB, or RTTY.
4. Two contacts with any one YJ8 station will be accepted providing these contacts are made on different days, different bands or by different licensed amateurs around the world to qualify for a commemorative award.

SPECIAL PREFIX
To commemorate the 25th anniversary of the Amateur Radio Association of New Caledonia, all members of the club will use a special prefix during the period from August 9 to December 31, 1986 inclusive.

The prefix will be FK25.
At the same time, and for the same period, the club station will use the call sign FK25A.

COMMENORATIVE AWARD

1. PERIOD — from August 9 until December 31, 1986 inclusive.
2. Contacts from January 1, 1972 or after are valid for this award.
3. All stations, any mode, any band.
4. Applicant shall submit normal log information.
5. The application shall be sent together with 12 IRCs or US$2 for surface mail or eight IRCs or US$3 for air mail.

THE BUNYIP AWARD
The Bunyip Award is presented by the Lower Murray Amateur Radio Club.

The requirements to obtain the award are as follows:

— Australian stations are to work the Club Station VK5ALM, and five club members or seven club members.
— DX stations are to work VK5ALM and two club members or four club members.
— Shortwave Listeners may also apply for the award.

Log to be set out with Date; Frequency; Call Sign; Name; Location.
Cost of the award is $42 plus a 50 cent stamp.

Applications to be sent to: Awards Manager LMARC, PO Box 234, Murray Bridge, SA, 5253.

CLUB MEMBERS — VKs ABW; AHK; AKC; BRS; JP; NRB; NSI; PAN; PGH; UY; YU.

WIA 75 AWARD
Hasmo Soejono YC2ERJ, Certificate No 664.

DARC DX AWARDS
General Rules — These diplomas can be obtained by licensed radio amateurs and SWLs worldwide. All contacts must be made from the same country.

Awards for club stations will be issued to the club and not to an individual operator. The DARC DX Awards are based on the European Country List and the ARRL DXCC List. All amateur bands, for which the applicant holds a valid license may be used. A set application form for the DARC DX Awards is available for three IRCs at the address below. The use of these official forms is obligatory.

QSL cards for all contacts claimed must be submitted with the application. Any altering or forgery will result in disqualification. The service charge is 10 IRCs, 10 DM or US$5 per award.

The cost for each endorsement is five IRCs, 5.- DM or US$3.

All applications to DARC DX Awards, Walter Geyerhaller DL3PK, PO Box 1328, D-6950.
HALLEY’S COMET AGAIN

Further to the sightings by people who saw Halley’s comet in 1910, see page 11, June 4, 1984, I have received a second report from a local observer who saw it last fall.

The first comes from Eric VK2NWV, who writes: “In September 1986, I saw Halley’s Comet in daytime during 1986. I have observed it on many occasions since then.”

The second comes from Mrs. Fleishman prior to its visit this time...”

Mrs. Fleishman’s account is as follows...”

Regarding Halley’s Comet — I was 10 years of age and remember it in May or June of 1910. It was early morning, very cold and frosty, a clear sky and the Comet was clearly visible to the naked eye. At the time I was living at a small village about half way between Bathurst and Oberon in NSW.

“The Comet’s coma was in the southern sky and was a clear bright band with a fan-like tail that appeared to be moving in an easterly direction...”

The third letter is from Eric VK4XN, “...If I delay any longer penning this letter, the Comet will be on its way back!...”

All through the years I’ve had a memory of my father telling me out of bed one night in 1910, and pointing out to me this bright object spread out across the sky. This occurred at Ravenswood, an old gold mining town in North Queensland where I was about four and a half years of age. According to some reports in the local paper, I wonder if some of the sightings in that period were factual or had some of the people actually seen it. I also viewed it on March 12, this year with the aid of binoculars at 5 am, after waiting for a break from the clouds, a little south of due-east. It was early morning, very cold and frosty, a clear sky...”

Well, thank you all for your interest in putting pen to paper, to allow it to be documented, so amateurs may compare it the next time it appears...

Contributed by Ken McLachlan VK3AH

VE7EXPO AMATEUR RADIO SOCIETY

The amateur radio station exhibit at Expo 86 reflects amateur radio’s unique role in providing emergency and public service communications and also demonstrates recent amateur contributions to progress in communications.

The station features many state-of-the-art technical innovations pioneered by amateur operators, including satellite, amateur television, and packet data communications. More traditional modes of communications such as Morse code, voice, and RTTY will demonstrate the station’s theme Communications for Everyone.

The station operates from 160 metres to 1.2 GHz daily from 1700 UTC to 0500 UTC the following day until October 13, 1986. CW frequencies are 3.510 or 3.710; 7.080 or 7.155; 14.135 or 14.205; 21.135 or 21.205; 28.010 or 28.110 MHz.

SSTV: 3.845 or 3.910 MHz PM...”
As I was recently listening on the 41 metre broadcasting allocation to some international stations, I became aware of the distinctive propagational changes to signals from Europe, around mid-winter, as I am writing this, we have excellent propagation during daylight hours, yet it is poor during the hours of darkness.

This is not surprising if you refer to the Great Circle Map in a previous Call Book; Long Path signals from Europe traverse across the southern end of South America. As the sun rises in Europe, one can readily follow the propagation pattern. Signals start to deteriorate, firstly in eastern Europe, going out at 0500 UTC. The further west you go, signal levels are okay until their local sunrise.

United Kingdom signals usually disappear around 0700 UTC. By now, conditions have significantly altered, as we approach our spring, and Europe their autumn. Yet, at the time as I collate these notes, the pattern is quite marked.

**SOME SIGNALS UP IN LEVEL**

As signals from Europe and the Americas sharply decline at our local sunset, coincidently Asian and North Pacific signals have come up in level. For example, the Indonesian provincial station located in Irian Jaya, which is not normally heard when European signals are on either 9.615 or 9.610 MHz, is easily heard around 0730 UTC. It varies in frequency, hovering about 9.612 MHz and is usually in Bahasa Indonesian although indigenous languages/dialects have been heard. These are understood across the border in Papua-Nuigini.

Not surprisingly, stations from Japan, Korea, China, and the Asiatic USSR are commonly heard at consistent strength. One station not normally heard in this region, because Australia is not on their antenna pattern, is heard very well. It is the Korean station on 7.695 MHz, operating across the entire HF spectrum at odd hours, these signals are usually heard on A3E or H3E (upper). Some maintain that they alternate in frequency and operational times in a fairly predictable pattern. Recently, one of these stations popped up on our exclusive 20 metre allocation, 14.130 MHz at 1200 UTC. I could not readily identify the language, but surmise it was Arabic. Some DXers have done direction finding (DF) work on these signals, pin-pointing some of these to East Germany or Cuba, whilst others have been traced to the US and the Korean Peninsula (both north and south).

**IS IT ESPIONAGE?**

Have you heard the "Numbers" stations around the HF bands? These, admittedly have been heard around for some time, ever since World War II in fact. Transmissions are usually on AM with someone reading out a stream of numerical groups. No identification is usually given. Languages vary, but Spanish and German are commonly heard. Identification amongst the DX community is that they are engaged in espionage.

Operating across the entire HF spectrum at odd hours, these signals are usually heard on A3E or H3E (upper). Some maintain that they alternate the frequencies and operational times in a fairly predictable pattern. Recently, one of these stations popped up on our exclusive 20 metre allocation, 14.130 MHz at 1200 UTC. I could not readily identify the language, but surmise it was Arabic. Some DXers have done direction finding (DF) work on these signals, pin-pointing some of these to East Germany or Cuba, whilst others have been traced to the US and the Korean Peninsula (both north and south).

**UNUSUAL!**

Whilst we are on unusual stations, what is the station on 6.348 MHz, AM around 1000 UTC daily? Broadcasting in Korean, it has old Korean songs plus plenty of slogans. Identification is extremely difficult, but it is reportedly Radio Echo of Hope and located within South Korea.

The North Koreans have a well-known clandestine station on 4.119 MHz at 1200, also in Korean. Called Voice of Re-Unification the station has always claimed to be broadcasting from Seoul, which is in South Korea, yet monitors have heard cross-modulation from Radio Pyongyang in the north. It has an English program at 1400 UTC.

This clandestine warfare has been going on since the Korean War.

73 — Robin VK7RH
Since writing the column which appeared last month, I enjoyed a personal visit from Syd VK3ASC, and we had a long and pleasant chat about many things, including CW. And I received another interesting letter from Gordon VK1AD, much of which is worth repeating here...

"Firstly, let's clear up the matter of the telegraphic 'laugh'... my typewriter is one of those new-fangled electronic gadgets and has little or no sense of humour... the laugh was dah-dah-dah-dit... the dot on the end probably wasn't apparent, it was a signal that could be sent with considerable feeling (or lack of it), depending on the quality of the joke. For a really funny remark or joke or whatever, the signal would be sent with great feeling — length of the dashes exaggerated, and a short pause after each rendition of the signal — presumably for the operator to indulge in a real 'belly-laugh.' If the feeling was one of only slight amusement, the signal would be sent quickly and no pause for rolling in the aisles or anything, and then back to business.

"I am pretty sure that this signal and quite a few others (such as GJ) came from the old 'American' code. Simple numerals and codes were used similarly to today's Q-code. I faintly remember seeing recently some discussion on the use of 'D' to signal urgency... this is no doubt derived from the old sign, with many letters of the alphabet used in the American code and, of course, in practice abbreviated to 'D'. There was a code used in the old days... 29 to indicate a message that could not be delivered for some reason, the clerk who looked after such matters was known in Australian Post Offices for many years as the '29 clerk.' The old American code was designed to save time, and even had a system of 'two letters used in the alphabet' abbreviated; eg Y was dit-dit dit-dit, C was dit dit dit, R was dit dit dit, and so on. Apparently, the old-timers were too lazy to send many dashes!

"The mechanical Morse, Gordon says... it took many varied forms in this country. The type used was geared very closely to the traffic demand on a particular circuit. Manual Morse was used on lightly loaded circuits, where usually there were no openings concentrated — this was what was called a 'closed circuit' system. On more heavily loaded circuits, duplex working used to be... this had two men at each end, one sending and one receiving simultaneously over one line. (I still have a circuit diagram of this system, I think)... and then a system called 'Diplex' was used where one wire was used, but traffic was split up into two or less unidirectional channels. Two men were simultaneously in the same direction over one wire. There was even one system where two Diplaxes were used... that is four operators sending in the same direction simultaneously over one wire.

"The type of mechanical Morse you were familiar with as a lad (described to Gordon in a letter) was probably the old 'Wheelstone System'... what a fertile imagination the man must have had. This was a system whereby a machine called a 'gell' was used to punch up a tape in Morse in the following fashion:

"This was sent at around 80 to 100 words-per-minute if memory serves me correctly, and it was reproduced at the other end in the same fashion — that is, on a punched tape. The punched tape was then fed into a 'reader,' a machine which transcribed the Morse characters as letters on a paper tape. Handling this paper tape was quite an art — one form was pre-gummed and ran over a roller picking up words from a tape, and the other was plain tape which ran over a roller picking up gum from a trough — the beginner usually finished the day with hands, and shirt, and various other parts of the anatomy covered with sticky goo. However, with a little practice, a gummer could get through a staggering amount of work, and still leave most of the gum on the tape.

"We all know that the first words sent in Morse were "What has God wrought." But do you know the occasion, or who suggested them? very interesting reading. Tony's particular interest at the moment is tracing the history of the International Morse (ITU Standard Morse as we know it today), 73 till next month."
MOUNT GAMBIER'S 22ND ANNUAL
CONVENTION
June 7-8

Well! If you missed the Mount Gambier Convention this year, you certainly missed another good one.

Upon arriving on the Saturday, as did most interstate visitors, it was obvious that Mount Gambier had surely turned on beautiful weather.

The Convention was very well supported by local and interstate trade displays, with some new and well-known equipment available on the market today at bargain prices. The Component Group of the South Australian Division also created a lot of interest as did the Pre-loved White Elephant Tables.

The Trade Displays certainly proved popular with visitors to the Convention.

The activities were too numerous to mention, but by the excellent participation in the Fox and Sniffer Hunts on the Sunday, it was surely one way of keeping out of the cold weather.

Antennas to the ready for the Fox Hunt.

A barbecue lunch was served and was well accepted by all in attendance. Particularly impressive was that there was plenty of activities all day and yet there was still time to take a drive around some of the tourist sights.

The Trade Displays certainly proved popular with visitors to the Convention.

Presentations were held at the end of the day to the various winners of the events held over the weekend.

Winner of the Home-brew Section, with a beautiful piece of workmanship moulded into a Cavity Filter, was Brian VK3AFN.

The Perpetual Trophy, over the course of the weekend, went to Richard VK7CG, who thanked the committee for an excellent program of events.

At the close of the day, an extremely enjoyable smorgasboard tea was served. A very special thanks is extended to all the ladies and their helpers, who spent most of the week and the weekend preparing for, and serving the hungry gathering.

To the SERG Committee, a very warm thank you from one very happy visitor on behalf of fellow amateurs, families and friends for a very enjoyable and well organised convention. And a special thanks to VKSEE and VKSOA for their hospitality.

If you did not attend the 22nd SERG Convention in Mount Gambier, promise yourself a treat next year.

Some of the members and family of the North East Radio Group, VK3.

From left: Kevin VKSOA, Woody VK3AGD and John VK3XS in VKSOA's shack.
year and make sure you attend the 23rd Annual SERC Convention next year. You certainly will not regret it.

Photographs and story contributed by David McAulay VK3EW

COMMUNICATION DAY 1986

The Shepparton and District Amateur Radio Club is holding its Communications Day on Sunday, September 7, 1986. The event was previously held in 1983 and 1984 and proved popular with amateurs throughout Victoria and southern New South Wales.

This year there will be demonstrations of the latest equipment and radio techniques. On display there will be a home-type AUSSAT receiver station, which will probably be the first time many amateurs have seen the picture quality from Australia's own satellite.

Early indications are that there will be a very large range of new equipment on display whilst disposals type gear will also be available, along with a range of components.

Demonstrations of packet radio, hopefully on HF as well as VH; RTTY and a comprehensive demonstration station will give plenty to see and talk about.

The Club will also be launching the Wombat Award. This is the Club's first entry into this field and the numbered awards will be eagerly sought.

The venue will be the Shepparton Showgrounds, and tea and coffee will flow all day. Also lunch will be available.

Further information may be obtained from Peter O'Keefe VK3YR, PO Box 692, Shepparton, Vic. 3630 or phone (058) 21 6070.

NORTH EAST ZONE

Fifteen members attended the meeting of the Zone held at the Wangaratta TAFE College (thanks to Dave) on Sunday June 1. Also in attendance were two prospective members and a special guest, Barry VK3XV, on behalf of the Divisional Council.

Many thanks to Barry for the news of the latest WA happenings and for a very lively discussion. The main interest was in the new Porepunkah repeater, and the links to Wodonga and Corryong.

The Zone is now expecting some action in the near future and with luck and a bit of work, Porepunkah may be ready and running in time for the ski season visitors.

One solar panel has been purchased, and the two mountains are presently in Shepparton being galvanized.

The nine dB antenna for VK3RNE has arrived and as soon as the new mounts are sorted out, and a sky-hook arranged, there will be work on installing. Many thanks to VK3s AQU, DUB and ZR for their donations for the solar panels.

The Sunday Broadcast proposals were met with genuine approval as reception has been poor in the past. Seymour on 80 metres should improve matters considerably.

The meeting took place on the new packet repeater located in the Albury area. Thanks to the dedication of about five members, commencement of operation should not be too far off.

Also discussed was the matter of equipment disposals, and it was suggested that an insert in Amateur Radio be provided to be sent in by members who wish to compete in a ballot for any goodies. The country members who used this system in the past all claim that it was much fairer.

The next meeting of the Zone will be advertised on the Sunday Morning Broadcasts and in Amateur Radio. Everyone is welcome.

Contributed by Bill Griffith VK3CGG, Publicity Officer for the Zone

GEELOUG AMATEUR RADIO CLUB

The Annual General Meeting of the Geelong Amateur Radio Club was held on April 18, with the following office-bearers being elected:

President: Alf Forster VK3AJF
Secretary: Barry Akeley VK3YXK
Treasurer: Carlo Leone VK3BCL
General Committee: Mike Trickett VK3ASQ and Albert Gnaccarini VK3ZXX

The repeater rack of VK4RTA, which is one of a series being installed to push modern communications to the outback. This station with its 165 feet (50m) tower receives signals from Mount Bellenden Ker on 6 GHz and re-transmits them to Mount Garnet, thence on to Mount Surprise, Georgetown and beyond.

There are 1800 channels available for telephones, telex, data and television.

The two-metre repeater equipment is the original history making VK4RCA rig which has been overhauled and modified. Its transmit frequency is 146.675 MHz and it receives 146.075 MHz with a time-out of four minutes. The effective radiated power at present is 10 watts and the antenna is a vertical collinear with a 3 dB gain.

Thanks to the efforts of WIF VK4NZN, Dale VK4KDM, Graham VK4FGB, plus other club members, far-norther amateurs have another VHF link which also provides a valuable back-up for VK4RCA in times of emergency.

From left: Dale VK4KDM, Bill VK42N and Colin VK4EX, Club President.

Photograph courtesy Ted Gabriel VK4YG

The repeater of VK4RTA has been accessed from Hughenden by Max VK4BMW and John VK4FNO/P under inversion conditions.

A Service Area Map of both repeaters, VK4s RTA and RCA, will be compiled, so reports, either direct on the Queensland Net, Thursday evenings at 0930 UTC on 3.605 MHz, or by mail, would be greatly appreciated. (Please state location, type of antenna and power.)

Location Co-ordinates — VK4RTA: Latitude 17 degrees 30 minutes south. Longitude 145 degrees 28 minutes east.
DISABLED PERSON'S RADIO CLUB

The VK4 Disabled Person's Radio Club, VK4DTB, was officially opened in Toowoomba by Senator Kerry James, representing the Federal Minister for Communications, the Honorable Michael Duffy, on the August 24, 1983

To celebrate the Club's third anniversary, an 'on-air' day will be held at Roley Norgaard's QTH on Saturday, August 31, 1983.

The 'on-air' activities will commence at 0001 UTC and cease at 0700 UTC. Should there be operators available, these hours will be extended.

The frequencies on which the Club proposes to operate are as follows:
- 3590; 7090; 14190; 21190 MHz.

Use of these frequencies is subject to the availability and expense of operators, it is hoped SSB, CW and RTTY will all be used.

Further inquiries can be made by contacting the Club on (076) 96 7587 or Gearme VK4NYE on (076) 30 8323. Both are QTH: 56 Baden Powell Drive, Frankston, Vic. 3199.

The Club is looking forward to meeting you on this day.

Contributed by Roley Norgaard VK4AOR, Station Manager for VK4BTR

DEVIL NEWS from the North West

There is not a lot of news to report from the Branch this month as the meeting was reduced to just a few minutes. The ladies would not have to wait around too long.

The six ladies present and the guest speaker and his wife were welcomed by Bob VK7KAB. It was also announced to the 16 members present that VK7RAD was operational from VK7ZAP's QTH, and attention was drawn to the recently completed Diplexer, which was on display for members to see how it was put into operation.

Darryl Ogdens was welcomed as a new member.

The rest of the evening was spent learning about Camp Quality with the assistance of a short film. John explained the facts and requirements of the camp. The camp is from December 8 to 14 and during that time, those involved will have their entire day and some of their night's rest taken away from them.

The effective way to ensure that they will come back will be through the understanding of volunteers and their families before they commit themselves.

The men will be involved in communications for the camp and a station for contacts with other children for the camp children to talk to. Others will be involved in the activities side of things as well as a Video.

As the date draws nearer, donations of cakes and biscuits may be asked for as the whole project is public funded and every cent is most important.

A pleasant get-together and supper followed to complete the evening.

The new club room is progressing quite well and some planned benches are now built and in place. (It was decided at the meeting to reimburse Greg of $25; for the cost of the timber which he had bought with his own funds). Thanks also to Greg for getting these notes together.

There was a Saturday Working Bee recently which resulted in the antennas being shifted and the coaxial cable being re-located into the room.

Nine willing pairs of hands made the Bee a great success.

There may be a need for more Working Bees in the near future to continue with the project — Greg will no doubt let all members know when and why.

Contributed by Max Hardstaff VK7KY

DALBY AND DISTRICT AMATEUR RADIO CLUB

The Dalby and District Amateur Radio Club, although small in size, is very enthusiastic in its activities. The largest achievement of the Club has been to successfully establish a UHF repeater which is situated on Mount Mowbullan, in the Bunya Mountains north-east of Dalby.

The repeater consists of an old commercial UHF transceiver which has been converted to the appropriate frequency.

Contacting Roley VK4AOR, on (076) 96 7587 or Gearme VK4NYE on (076) 30 8323. Both are QTH: 56 Baden Powell Drive, Frankston, Vic. 3199.

The statement was made to me recently that, although my position is called Education Co-ordinator, as it has paid little attention to methods of educating the general public about matters relating to amateur radio.

I do not wish to go into detail at this time. Perhaps when we can get to the heart of the matter, we can examine the situation more closely.

Several recent articles have suggested ways of increasing the number of active operators.

The value of the hobby has lain less in the actual proposals than in the amount of thought, discussion and argument generated by them. Some of the proposals have been directed at particular target groups; eg the young, engineering students and computer enthusiasts. Less consideration has been given to publicising the hobby amongst the general population, which may well be the easiest and most effective way of ensuring the future of our hobby and the Institute.

A R Showcase

HARD DISKS ARE TOO RELIABLE!!!

Users are taking huge risks with valuable data — an odd statement from one of the hard disk industry's biggest names. Max Hardstaff, CEO and Marketing Manager for Daneva Australia, a leading distributor of mass storage devices, Max should know what he is talking about.

"Most hard disk drive have experienced so reliable that users forget that it is even there and then POW! It right out of nowhere a power glitch, a heavy handed user or an employee with an axe to grind erases a year's worth of data."

Max has seen the cost of hard disk drives drop to the point that the average Personal Computer is not complete without one, and users no longer experience the cost of their stored data with the value of the storage device.

"What price do you put on 20 MByte of data? I'm not only talking about the re-entry man hours, some data is just not recoverable."

Max sees an urgent necessity for education of the PC fraternity so that they really understand the limitations of hard disk integrity and take the necessary precautions to ensure their data's protection.

Daneva offers at least seven unique solutions to the backup and security problem. Using Fastback, a floppy based archiving system, a PC user can backup 10 MBytes in eight minutes. On an AT, 20 MBytes can be backed in the same time.

Removable hard disk media, is an excellent method of having a hard disk and storing it too — there are about three standards of tape drive with the data cartridge being the most popular.

With a Portable File it is possible to keep a mirror of the PC's hard disk.

The ultimate backup for high performance hard disks of 70 MBytes or more is the laser disk.

For further information contact Daneva Australia Pty Ltd, 64-66 Bay Road, Sandringham, Vic. 3191 or phone (03) 598 5622.

THOUGHT FOR THE MONTH

People who don't change their minds are either perfect or stubborn.

Transceiver: "Did Dracula like computers?"

Micro-computer: "Yes! It was love at first Byte."

Brenda Edmonds VK3KT

FEDERAL EDUCATION OFFICER

56 Baden Powell Drive, Frankston, Vic. 3199
AUTUMN AMATEUR RADIO HOUSE
is located at 109 Wigram Street, Parramatta. It is open 2-6 pm Monday to Friday and from 7 to 9 pm Wednesday evenings. Telephone (02) 689 2417 during these times.

REMEMBRANCE DAY CONTEST
See July Amateur Radio for rule details. For the past two years, VK2 has been the winning Division. Can we make it a third time? I am sure that we can, if as many VK2s as possible set aside some time during the weekend of August 16 and 17, to have as many contacts as possible. Follow this by the important submission of the log. The RD opening address will be transmitted before the 6 pm start and VK2WI will commence at 5.30 pm with the weekly news bulletin followed by the opening address. There will not be the transmission at 11 am on Sunday, 17th, but the evening session at 7.30 pm will be as usual.

SEMINAR AND DINNER
It has been decided to hold the next VK2 Seminar at Amateur Radio House on Saturday, September 15, and dinner on Saturday evening, October 11. Members are reminded of the monthly barbecue at Dural on the first Sunday of the month — August 3 and September 7.

The Fireworks evening was held in ideal weather on Saturday May 31, with an attendance of over 100. Next year’s event will be held on the Saturday evening before the June long weekend.

160 METRE BROADCAST
The frequency for this broadcast is to change. The present frequency of 1.825 MHz now falls within the broadcast band. It has been decided by Council to change, particularly with our evening transmission. The chosen frequency is 1.845 MHz. The old frequency will be retained in the VHF Band Plan for some time. It should be noted that the VK2RSY Beacons at Dural, will be changing frequency before the lower half of the band is full on 1.8 MHz. The old frequency will be retained in the VHF Band Plan for some time. It should be noted that the VK2RSY Beacons at Dural, will be changing frequency.

FIELD DAY
The Oxley Region Field Day was held at Port Macquarie over the June long weekend, in ideal weather conditions. Registrations exceeded 150. The next country field day will be the South West Zone, which will be held in the Riverina region on October 19.

WICEN
Coming activities for WICEN include the City to Surf in Sydney, on Sunday morning, August 19. The Car Rally at Batemans Bay will be held on the weekend of August 26-28, and the Canoe Classic on the Hawkesbury over the weekend October 18-19. Registrations to attend may be given on the weekly VHF Sydney nets — Thursday at 8.30 pm or telephone the Divisional Office at the times and numbers mentioned above.

NEW MEMBERS
The VK2 Division of the WIA welcomes the following new members.
B Badogh VK2BBX, Liverpool; J M Brest VK2PJB, French’s Forest; A G Brodie VK2BVA, Junee; D S Brown VK2JAG, West Pymble; R A Clark VK2JUN, Windmere; L E Cooke Assoc, Stockton; D Dauner VK2BDD, Bankstown; R J Foster Assoc, Hornsby; R J Gifford-Moore VK2XEU, Artemara; J B Harris-Assoc, Hay; F G Ison VK2DOX, Farmborough Heights; F Manthey VK2MKT, Birmingham Gardens; S Murdoch VK2T1E, Wye; I L Norman VK2ZIN, New Lambton; M E O’Ryan Assoc, Concord; G B Parsons VK2DUR, Sanctuary Point; C J Proud Assoc, Fairfield West; P J Sturt VK2ZRT, New Lambton Heights; W Thompson Assoc, Cessnock; J E Weldon Assoc, Cessnock.

INTRUDER WATCH
Starting off with the unpleasant news of how the amateur bands were disrupted in April, we have the following statistics:

321: AM intruders; 162 CW intruders; 102 using RTTY; 48 other modes, and 73 intruder stations gave their call signs.

Probably there are those who will say, “Wait a minute — 73 stations gave their call signs? Well, if you know who they are, why don’t you do something about it?” Why, indeed?

Unfortunately, it is not as simple as that. Knowing the call sign does not always tell us where they are, or who they are. Also, obviously, a great many of these stations are working with the blessing of their country’s administrations!

There is not much we can do about that, short of declaring war! However, we can continue to appeal to the various administrations, and hope that, somehow later, their conscience costs the better of them. Meanwhile, thanks to those who sent in reports for April 1986; vis VK1NUN, VK2s COP, DEJ, DW4, EHQ, PS, SWL, G H A Bradford, VK3s LC, XB, VK4s AKX, AV, BG, BHJ, BTW, KAL, KHZ, VK5s BJF, GZ, VK6s JO, OD, RO, XV, ZX, VK7RH, VK8s HA and JF.

MORE TAXI CABS
The problem of the Asian activity on 28 MHz, allegedly coming from Hong Kong, appears to be building into a real problem. I received a letter from WICEN-2OCG, who said that the taxi-cabs in the colony were indeed using 28 MHz, and he alleged that they were notAustralian licensed operators, and therefore, not subject to our authorities knowledge that the chaos the cabs are causing is not internal to their borders, and when the solar cycle gets it’s act together, there will no doubt be a lot of disgruntled 10 metre enthusiasts who will be finding that they have to make do with 2 meters. (Which is okay if one is interested in seeing Hong Kong, but I warn you, the fare will be astronomical!)

COMPLAIN NOW!
Seriously, now is the time to start complaining, before the lower half of the band is full on non-amateur traffic. So, if you hear ’em — report ’em. TXN. (They are currently being heard up to 28,500 kHz). The people who operate the beacon in the 10 metre beacon segment should have an interest in keeping the frequencies clear.
This month's notes depict the 1986 Club Conference in photographs. The photographs and captions are courtesy of Bud Pounsett VK4QY.

Michael Owen VK3KI, speaks with David VK4AFA (left), Peter VK4KIR, and Michael VK4YOB.

LET'S REMEMBER HERTZ

1986 is the centennial year of Heinrich Hertz's pioneer experiments in electro-magnetic waves. It was in November/December 1886, when he was a professor at the Technical University of Karlsruhe, Germany, that Hertz first watched the discharging of a Leiden jar (nothing else than a large capacitor) through a spark gap, which was in the centre of a three-metre-long copper wire.

Hertz realised that in a similar wire with a gap two-metres apart, small sparks were also generated without any physical connection between the two wire-gap systems. These were the first transmitter and receiver of electro-magnetic waves.

Only a few months later, Hertz found the wavelength of the oscillations (eight metres), their velocity in free space, the influence of resonance, nodes of zero electric effects on the wires, the rectilinear propagation of the waves and their reflection from metal surfaces.Performed in the largest auditorium available, he experimented with wave-lengths down to half-a-metre.

Thus, Heinrich Hertz laid down the fundamentals of all varieties of modern-day communications, including amateur radio. But he did not live long enough to see the results of his work; he died on January 1, 1894.

Written by Wolff Parmentier DJ5JH in QST February 1986, and contributed to AR by Steve Mahory VK5AIM

David Jerome VK4YAN, Queensland Divisional President, with other delegates listens intently to a lecture on packet radio given by John Bews VK4KJB.

During morning tea, Bill Sebbins VK4XZ, talks to Ross VK4IY and Charles VK4BPI.

Below:
Another view of delegates.

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AR86
The 1986 Clubs Convention, which was our third such event, was held over the weekend of April 11-13, at Cooranga YWCA Conference Centre, Aldinga Beach.

Clubs represented were: Adelaide Hills, Lower Murray, South East (SERG), Second Adelaide Scout Radio Group, LEPC, ACBRO, SA ATV Group, Darwin, South Coast, Elizabeth and Port Adelaide.

It was the first year that the Adelaide Hills ARS and the Association of Citizens and Band Radio Operators have attended, and I think we all gained much from their input.

Friday night was informal. Saturday morning saw the start of the official business and after a welcome and introduction from President Dick Boxall, and a brief word from the delegates about their clubs, we started on the Federal Convention Agenda Items, taking VK5 first. Prior to the start of the afternoon session, we presented Wendy Clegg (wife of VK5AMK), Gill Wardrop (wife of VK5AWM), and Liz Ratcliff (wife of VK5AGR), with a pot plant each as a thank you gift for their Catering Duties at this and the past two Conventions.

Gill Wardrop receives a gift for cooking for the past three Clubs Conventions.

From left: Jack VK5FV, Representative from Port Adelaide ARC, Brian Harrison, Australian Association of Citizen and Band Radio Operators Inc, Gordon VK5KGS, Secretary Adelaide Hills ARS.

Photograph courtesy Peter Koen, Secretary VK5BPA

DOWN TO BUSINESS

Friday night was informal. Saturday morning saw the start of the official business and after a welcome and introduction from President Dick Boxall, and a brief word from the delegates about their clubs, we started on the Federal Convention Agenda Items, taking VK5 first. Prior to the start of the afternoon session, we presented Wendy Clegg (wife of VK5AMK), Gill Wardrop (wife of VK5AWM), and Liz Ratcliff (wife of VK5AGR), with a pot plant each as a thank you gift for their Catering Duties at this and the past two Conventions.

Wendy Clegg receives a gift for organising the menu and cooking for the past three Clubs Conventions. Husband David VK5AMK, is Head-Buyer.

Photograph courtesy Peter Koen, Secretary VK5BPA

INFORMATIVE TALKS

After lunch, we were given some most informative "Brief Talks" by Ken Hall VK5AKH, the Federal Awards Manager, John Gough VK5OD, the Divisional QSL Bureau Manager, Bill Wardrop VK5AWM, the Divisional WICEN Director, and Peter Koen, Secretary of the Second Adelaide Scout Radio Group. (Peter is perhaps better known, unofficially, as our "Display Man", which was the topic he chose to talk about).

Many interested visitors attended one or more of the Saturday sessions. It has been suggested that we did not advertise it enough, in fact, 'kept it a secret.' This was not true, however, if we had made it an open invitation to all, without knowing who would be turning up, it could have made catering and seating arrangements rather difficult. Anyone who feels that they would like to attend in the future need only contact whoever is doing the organising so that we know how many will be attending.

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

Saturday night. Max showed us a very old item, recently transcribed to video, on Thomas Edison's assistant demonstrating and describing some of Edison's earliest experiments. Max then gave us a very interesting talk on his own early life and how he got involved with radio.

Later still he showed us some slides of historical interest, which had been put together, with commentary, by Chris Long, former assistant curator at the Melbourne Museum of Applied Arts and Sciences. Chris also worked with Peter Wofenden VK5KAL, and Max, on a tape of Historical Sounds, including the voice of Marconi, to commemorate the WIA's 75th Anniversary last year.

Max presented a copy of this tape to the Division, which by now you may already have heard, via the Broadcast. Members can also purchase copies if they wish. Max was accompanied on this trip by his cousin, Murray Hull VK3KDL, and we were delighted to have both of them with us.

Liz Ratcliffe was presented with a gift from the then President of the WIA (SA) Division for her assistance with the meals at the past three Conventions.

Photograph courtesy Peter Koen, Secretary VK5BPA

AND INTO DISCUSSION

After listening to the Broadcast on Sunday morning, we finished the remaining Agenda Items and Carol McKenzie VK5PWA, the President of the Lower Eyre Peninsula ARC, David VK5AMK, (then Council Member), Don VK5ADD, VK5 Secretary.

Photograph courtesy Peter Koen, Secretary VK5BPA

Club Representatives and the WIA (SA) Council.

Photograph courtesy Peter Koen, Secretary VK5BPA

Club Representatives listen intently to Max VK3ZS, WIA Federal Historian.

Photograph courtesy Peter Koen, Secretary VK5BPA

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From left: Larry VK8LM, Darwin ARC, Steve VK3YYV and Dave VK3DgJ from the South East RG and Bob VK5ADR, Leader of VK3YYV and Dave VK3DGJ from the South East Radio Group.

Photograph courtesy Peter Koen, Secretary VK5BPA

Max VK3ZS, addresses the Convention.

Photograph courtesy Peter Koen, Secretary VK5BPA

I would like to thank all who attended for their continued support, and the fact that, despite some "vigorous discussions", some very solid groundwork was laid on which to build a better understanding between Divisional Council and the Affiliated Clubs.

SPECIAL THANKS

Mike VK3ZS, addresses the Convention.

Photograph courtesy Peter Koen, Secretary VK5BPA

Max VK3ZS, addresses the Convention.

Photograph courtesy Peter Koen, Secretary VK5BPA

NOTE: For those who like to plan ahead, we have booked Coorong for the ANZAC weekend next year (April 23-26), also we are looking for more help in the Catering Department. In particular, someone to take Wendy Clegg's place in doing the buying. This should not be too hard as they have been doing it for 22 years and so probably have it 'down to a fine art' but when you realise how much/many of everything is required. Please let me know if you would like to be involved.

THE SOUTH EAST RADIO GROUP CONVENTION

For many years people have been telling me that I should go down to Mount Gambier on the Queen's Birthday long weekend (June 5th) for the SERG Convention. How right they were! Even the weather was reasonably kind to us and as for the hospitality, it could not be faulted. The SERG ladies did a magnificent job with the catering (for 200 on the Sunday), and the events, etc all ran smoothly with the help of the local OM's. I realise that they have been doing it for 22 years and so probably have it 'down to a fine art' but when you realise how many active members of the Club there are, it really makes you appreciate the work that must go into it. There was also a surprise finale this year, when the trophy for the highest aggregate of points went to VK7! That should make the VK3s and 5s even more determined next year: See you next year at SERG!!

From left: Colin VK5JR Representative from Lower Murray ARC, Charlie VK5ACF, Representative from ATV Group, Steve VK5AOZ and Vince VK5ZSV, both Representatives from the Elizabeth ARC.

Photograph courtesy Peter Koen, Secretary VK5BPA

Meal-time at the Convention.

Photograph courtesy Peter Koen, Secretary VK5BPA

NOTE: * denotes first Stateside

TEST EQUIPMENT

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VK HANDBOOK

There is a perceived need for an Australian Radio Handbook. Apart from one or two slim volumes licensing requirements, operating techniques, DXing, etc, are to date the only subjects so far covered in existing literature published in this country. Basic theory is adequately covered in overseas publications such as the ARRL and RSGB handbooks, Scroggies Foundations of Wireless, etc. Unfortunately much of the technical content of overseas books specify parts which are at best difficult — usually impossible to obtain in VK.

At present, there appears to be a significant level of interest in antennas, simple QRP transmitters and related devices, DC receivers, measuring instruments and so on. Looking through back issues of AR, it is possible to find a wealth of interesting articles and communications by the members, all making use of locally available components. Moreover, the membership would be interested in a handbook which attempts to cover a range of technical subjects and projects, put together by Australians.

If the idea is supported by the Publications Committee, I would be interested in contributing to and/or buying such a handbook, with the proviso that you will please let us know of your interest.

Yours fraternally,

Drew Diamond VK3XU,
Lot 2, Gatters Road,
Wonga Park, Vic. 3115.

The Publications Committee has discussed the possibility of producing a VK Handbook along the lines suggested. We need some idea of how many would be interested. If you, the reader of AR, would be interested in contributing to and/or buying such a handbook, please communicate your comments to the Publications Committee.

Yours fraternally,
I would like to say thank you to the WIA South Australian Division for the “Jubilee 150 Award”. I received my certificate in mid-May and was very pleased and impressed with it.

Also, my thanks to all the VK5 amateurs that I had some very enjoyable QSOs with. It took approximately 15 hours of on-air time to gain this award — 15 hours definitely not wasted as I enjoyed every minute.

Arthur Brean VK5GSY, 28 Benmow Street, Trigg, WA. 6029.

DISCUSSION PAPER

I write, yet again, to put forward some more comments and views about the Discussion Paper, and there being a continued lack of interest on the part of the WIA.

It seems that once again, CW is attacked. All the letters referred to appear in June Amateur Radio.

I have only one comment for Neil Trainor’s letter — hear hear! (Particularly the part about costs.)

I cannot agree with Max in the consideration of these two points.

We have a Kindergarten Licence. Like kindergartens in our schooling system, the Kindergarten Licence is not a compulsory item, however it can be beneficial to those who might have some difficulty in CW. It has been made available to ensure that they do not have to work so hard to get up to the standard of CW expected by the WIA.

2. Max intimates that through unknown means, that amateur radio is what they want. I feel this is wrong — not everyone has amateur friends/relatives to give them an initial sample of life with amateur radio. Some people take the gamble anyway, study for and get their licence, and are, I hope, glad of their effort.

However, people are basically lazy and are reluctant to do anything they are unsure of. These people would be more easily encouraged to join amateur ranks if they weren’t faced by the daunting task of studying for the Novice Licence.

Maybe I am too young to understand the reference to the “nine days wonder,” but I do understand the proverb, and what it means. It is a lesson we all have had to learn. Knowledge is useless if you are leading it to, and it wants a drink! More horses (potential amateurs) will drink (amateur radio) if the water looks clean (unthreatening) and/ or if the horse is not too thirsty (uninterested in amateur radio) there is little anyone can do, easier licenses or not.

Peter Frederick has some interesting ideas and caused a slight modification to my own ideas. I disagree with his suggestion for the removal of the CW requirement. Sure, five words-per-minute is painfully slow for some, but for others it is the best they have yet achieved.

Peter then goes on to say, “The real traditions of amateur radio are on the HF bands.” Agreed. So why remove CW, part of those traditions? It is known as a calling band, and for a reason.

Some people cannot get to classes and need the on-air experience to get up to those speeds. Would these people be denied full calls because of their geographical location?

I have a suggestion for a solution to the licence argument, and still make amateur radio more accessible.

Introduce one new licence (say the Beginner Licence) from the Beginner limited band space within the Novice allocation on 10 metres. Allow them to transmit 12 watts SSB within this segment. Place a time limit for the holding of a Beginners Licence to one or two years, renewable. In this way, the Beginners are on HF with opportunities to work DX and are also able to communicate with all other licence classes, but still with some encouragement for them to upgrade.

Include restricted data transmission facilities for Novices and retain the CW requirement as it stands.

Allow Limited licensees to utilise SSB (and possibly Data), on the same 10 metre segment as the Beginners.

This permits some interaction between all licence classes, and also gives a simple upgrading system. Holders of the Beginners licence can study the slightly more difficult Novice theory, and then study the much more difficult theory for the Limited licence with no CW.

I would like to say that I am opposed to the Canadian Proposals. It is a good to see such discussions flowing on such an important issue and I hope these comments may provide further ideas.

Yours sincerely,

Conrad Canterford VK3PHW, 26 Pyke Street, Tatura, Vic. 3616.

WANT TO TRADE? ??

I am interested in contacting Australian amateurs who would like to trade licences in Australia for CW keys made in the USA. The particular keys I am interested in are old; eg WWII and earlier, and hard to locate. I am a serious collector, motivated out of a fascination and love of the objects — I am not seeking profit.

Thank you.

Warren E Burbit K2UVV, 46A Milford Road, Suffern, NY, 10901. USA.

HOW DO YOU GET IT?

Greetings and thank you for the wonderful job you are doing with Amateur Radio. It is a publication of which you can be justly proud.

I have a good friend, Ray Pellowe VE3BAK, who is the editor of the Radio Society of Ontario’s magazine The Ontario Amateur. I would very much like to send him copies of our magazine.

Can you please advise me as soon as possible the subscription rate for such a delivery.

Could you also please advise the copyright position if he ever wanted to use one of your articles in their magazine.

Yours faithfully,

Ron Churcher VK7RN, PO Box 277, Devonport, Tas. 7310.

Subscription rates for non-member direct subscriber in Canada are $128 per annum and $270 for overseas.

You may either pay yourself, or the overseas amateur can be billed. We do not object to occasional reprinting, perhaps two or three items a year, as long as any remittance is made of author and source. — Ed.

TECHNICAL CORRESPONDENCE

I enjoyed reading John Gazzard’s article ‘Aerials and Earthings in May AR’, because he managed to avoid the theory. Possibly $7070 was the answer.

Consequently, I understood enough of it to hear an alarm bell ringing when he described how to calculate aerial impedance by measuring SWR. The ‘SWR at the dip’ will not be true reflection of the antenna impedance, in fact, by using a length other than halfwave multiples, it is possible to trim his antenna to 1/2; even if he has to adjust the coaxial length in the process.

I guess John meant to specify a coax length of halfwave multiples. As a matter of interest, I checked the SWR on my three element Yagi with the normal coax of random length (that means I have not got around to measuring it yet). I then added a metre length of coaxial cable and tried again with the results as follows:

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<td>1.00:1</td>
<td>1.30:1</td>
</tr>
<tr>
<td>14.150</td>
<td>1.20:1</td>
<td>1.51:1</td>
</tr>
<tr>
<td>14.200</td>
<td>1.05:1</td>
<td>1.35:1</td>
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<td>1.05:1</td>
<td>1.35:1</td>
</tr>
<tr>
<td>14.150</td>
<td>1.16:1</td>
<td>1.51:1</td>
</tr>
</tbody>
</table>

Makes you think doesn’t it.

Yours sincerely,

Noel Daves VK7EG, 30 Spencer Street, Burnie, Tas. 7320.

FOLLOW UP PRACTICE

Having been a member of the WIA and holding a call sign for the past three years, I have often read in AR criticism of these new operators as being black box operators only.

I say this is not always the case, but who can blame those who are? For instance, where are the post-theory practical classes for those people after completing the theory and passing the exam?

Does the WIA run or encourage such classes or are they content to push for theory and passes only, content with this than that membership may be?

I have made many inquiries during the past few months and have found it difficult to find anyone prepared to take such an assignment.

There are some amateurs in the fraternity who would be prepared to attend an organised group and pay for the instruction and anything useful may even attract new members for the Institute.

What about it WIA — a practical service to your fledgling operators.

Yours faithfully,

P H Gibbs VK3AQ, 37 Golfwood Close, Dingley Village, Vic. 3172.

AR AND AMATEUR RADI0

I personally feel that Amateur Radio magazines in 1986 have been a little more interesting in comparison to 1985. I think we over-did the anniversary a bit.

ALso the title ‘ Constructor or “Fiddler”, I like the technical articles best. It behaves all amateurs to have a go at building some bits of gear. After all, that is what amateur radio is supposed to be about all technology is getting a bit beyond a lot of us.

It is hard to please all of the people, all of the time!

Keep up the good work. It is appreciated and enjoyed by some.

Steve Mahony VK5AIM, 19 Kenilworth Road, Elizabeth Downs, SA, 5113.

ATTRACTING YOUNG PEOPLE

The increasing age of the amateur fraternity is great. I hope we can go on to 100-plus years. The entitlement of the young into amateur radio is another problem. My age is 57 years and I have only held a licence for one year.

The many young gadgets for and against being an amateur — equipment cost, if one is to be in the swim, is I feel, rather high for young people entering the hobby. Home-breeding satisfies this need may well be, is not a complete solution to the problem.

I was initially shocked to hear a VK full call telling his friend that he is going to sell his two-meter rig and will then buy a UHF-band CE. Subsequently, I am now convinced on one point — as an amateur on air, I can only talk with other
Solar activity was low in April with the exception of 24th when three M Class flares were observed. The flares arose from a new region which grew rapidly in the two previous days. They were observed at 0340-0355 UTC, and at 0340-0403 UTC and again at 0403-0500 UTC. The rapid growth of this region was shown by the sudden rise in the 10 cm flux after the 22nd. The region began to decay after the 25th and the values dropped back to low levels by the end of the month.

The 10 cm flux readings were:

1 = 72; 2 = 71; 4-11 = 72; 12 = 73; 13 = 74; 14 = 76; 16 = 75; 18 = 71; 24 = 82; 25 = 86; 26 = 84; 27 = 82; 28 = 79; 30 = 74. The average was 75.2, and the sunspot average was 20.4.

The running yearly average was 17.4 for October 1985.

### GEOMAGNETIC

#### April 10

The geomagnetic field was at active levels for most of the day with brief periods of minor storm conditions. April was an extremely quiet month even though the equinox months, such as April, are often much disturbed than average. The low monthly average of 7.3 made it the quietest month since 1980. The average level of magnetic disturbance has been falling over the past four years and is expected to reach a minimum around the time of the next equinoxes.

The geomagnetic disturbance index Ap. ranked as follows: No. Date Solar Cycle Ap Value
1. November 13, 1960 19 280
2. April 1, 1960 19 241
3. July 15, 1959 19 236
4. September 14, 1957 17 230
5. July 5, 1957 17 220

The running yearly average was 17.4 for October 1985.

### SOLAR GEOPHYSICAL SUMMARY — APRIL

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<tr>
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<td>March 25, 1940</td>
<td>17 185</td>
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<tr>
<td>August 5, 1972</td>
<td>20 182</td>
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<tr>
<td>March 27, 1957</td>
<td>19 179</td>
</tr>
</tbody>
</table>

### FEATURES

1. Cycle 19 (peak sunspot number of 201 in 1957) made the largest contribution with eight entries. However, Cycle 17 (peak sunspot number of 119 in 1937) contributed six entries in spite of a relatively modest cycle in amplitude.
2. Minor storms (17 out of 20) occurred after the time of the solar maximum of that cycle.
3. The equinox months (March-April and September-October) were the worst months with 13 entries.
4. Even though the November 13, 1960 date at the single most disturbed day, the period March 24-30, 1940 must rank as the worst week with three entries.

From data supplied by the Department of Science, IPS Radio and Space Services — April 1986
OBITUARIES

He was a skilled surgeon and practiced medicine for many years with great distinction and compassion.

In latter times, following the death of his wife, he retired to Cannons Creek on Westernport Bay where he could engage in his two favourite pastimes — amateur radio and sailing.

A high-point in his life was when he joined his sister and her husband in the West Indies, last year, and sailed in their 40 foot yacht through the Panama Canal and across the Pacific to Tahiti. His little FT-7 and a few metres of wire hauled to the mast-head gave great delight to his many amateur friends in VK who followed the yacht’s progress.

The tragic death of his eldest son David VK3PBJ, a few weeks earlier doubtless hardened his own passing.

Kelvin leaves two sons, John and Rex, and four grandsons, to whom we extend our sympathy.

Contributed by Rolf Hallamore VK3ARH

CLIFF GOLD VK4CG

CLIFF GOLD was born in Brisbane in 1906 and passed away peacefully on June 2, 1986.

He came on air in 1926 and experimented on the 5, 20, 32, 80, and 250 metre bands using a Hartley circuit with a UX216 tube. Power was from AC stepped up to 600 volts and rectified through 16 glass jars in bridge form. Grid leak was a jar of water and plate condensers of sheet glass and zinc. He had QSOs world-wide.

When the Queensland Radio Transmitters League was formed, Cliff became Treasurer, International Contact Station, Vigilance Officer, and member of the QRTL Traffic Branch.

Cliff was a WIA Federal Councillor in 1928.

As mentioned in Amateur Radio in October 1982, in a Thumbnail Sketch, Cliff was QGN’s announcer and engineer, he was also Uncle Cliff and W4GI’s Evergreen radio for the children’s session. Later, Cliff was Manager and Projectionist of the Empire Theatre, also Toowoomba … from whence he sometimes transmitted sound to his wife Grace, on five metres.

Cliff’s old friend of some 50 years, the late Bud W6CS (well-known in AMSAT circles), changed his call sign out of respect for Cliff.

A private cremation service on June 5, was attended by a WIA representative.

Cliff is survived by his wife, Grace, to whom deepest sympathy is extended.

Contributed by Peter Brown VK4PJ

ARTHUR FORECAST VK3AM

With the death of Arthur on June 5, 1986, another member of our fraternity has become a Silent Key.

Arthur was one of the few amongst us who held a licence for 60 years. 3AM was one of the best known of those radio amateurs broadcasting music during the 1920s on 200 metres. One year, he won a Gold Medal for the most popular station.

On leaving school during the First World War, he became a cinematograph operator and spent most of his working life at the Victory Theatre, Salisbury, The Plaza Theatre, and more recently at the Croydon Drive-In.

In his younger days, he was keen on motor-bike racing and was a lifelong friend of the late Ron Hipwell, a well-known champion at the old Aspendale Motor Race Track.

In his latter years, when he lived at The Drive-In, Victoria, he became an expert chicken sexer. He was a skilled mechanic, with a fine workshop and was well-known in Australia and overseas for his knowledge and construction of mobile antennas.

For some years he was Technical Storeman at Channel 2 on Mount Dandenong.

Arthur will be sadly missed from the daily net, which has been operating on 40 and 80 metres for about 25 years. He is only the third of this group to become a Silent Key, the others being Ivor Morgan VK3DH and Gil Miles VK2KI.

He was an early member of the Radio Amateur Old Timers Club and will be remembered by his many amateur friends both here and overseas.

Arthur’s wife, Vara, died some years ago. Deepest sympathy is extended to his two sons and two daughters.

Contributed by Keith Ballantyne VK3AKB

AIR-WOUND INDUCTANCES

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<th>B &amp; W</th>
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<td>$7.20</td>
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98 Canterbury Road, Canterbury, Vic. 3126
PHONE: 836 0707

AMATEUR RADIO, August 1986 - Page 63
MOONBOUNCE — 1961

For less than $100, W1TGZ built a parabolic-type reflector for 1296 Mc to get set for moonbounce activity.

From QST, April 1986

DEADLINE

All copy for inclusion in the October 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 21st August 1986.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details, eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamads as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers.

* Eight lines free to all WIA members. $9.00 per 10 words for non-members.

* Copy in typewrite, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162

* Repeats may be charged at full rates.

* QTHR means address is correct as set out in the WIA index.

* Eight lines free to all WIA members. $9.00 per 10 words for non-members.

* For non-members send 105* 220mm SASE to:

  JD & US IMPORTS, Box 157, RJ & US IMPORTS, send 105* 220mm SASE to:

  Large range for all

  AMIDON FERROMAGNETIC CORES:

  indexes thereof)

  merchandising purposes.

  wholesale

  your Hamads as clearly as possible. Please do not use

  each on a separate sheet of

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  PLEASE NOTE:

  * QTHR means address is correct as set out in the WIA

  * Repeats may be charged at full rates

  * Eight lines free to all WIA members. $9.00 per 10 words

  * Please remember your STD code with telephone

  * For non-members send 105* 220mm SASE to:

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HOBIG ELECTRONICS - 277 NELSON ROAD, M. NELSON, (03) 26 75 12
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MOK-12 (KIT) MOD-DEMOD

A high performance RTTY CW modem kit for use on a computer or teletype. Offers high noise immunity on receive. $199 + $18 p&p (kit) or $290 + $10 p&p assembled.

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Phone: (03) 873 3777 3 Lines
We are proud to announce that we have obtained the rights to publish a substantial part, of our choosing, from the monthly issues of the UK edition of ELEKTOR ELECTRONICS within each issue of Australian Electronics Monthly.

This means that, each month we'll be adding around 30 pages (often more) of projects, technical articles and features especially culled from the pages of one of the world's most widely read and respected electronics publications. And you'll get to see the latest material from Europe within weeks of it going on-sale there and months ahead of when it normally appears here!

Projects will be specially chosen and local parts supply sought prior to publication. Printed circuit boards will be available through our PC Board Service and, with the co-operation of retailers, at selected retail outlets. We confidently expect many of the Elektor projects to be available from local suppliers in kit form.

The Australian Electronics Monthly you have come to know and love will continue 'as usual' — the features, technical articles, projects and news. Elektor is planned to be incorporated as an additional section.

**What a tremendous BONUS!**

- More projects!
- More features!
- More articles!
- More data!

*Every month — commencing with October's issue.*

And that's not all! While we're importing material from one side of the globe, we're exporting it to the other! We have also recently concluded an agreement with the US magazine RADIO-ELECTRONICS to exchange editorial material. It seems US hobbyists are particularly enthusiastic about Australian electronics projects and we expect to export more material to Radio-Electronics than vice versa. Whenever topical and relevant features appear in Radio-Electronics, we'll move swiftly to bring them to you in the pages of Australian Electronics Monthly.

*Australian Electronics Monthly — bringing you the best, from around Australia and around the world.*
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Each year, the WIA Publications Committee selects several awards, one of these awards being the Al Shawsmith Journalistic Award. As the name suggests, this award is presented for the best article published in Amateur Radio from a journalistic point of view. There have been some doubts expressed recently whether the award is well known enough, and as a result, the Editor, in collaboration with Alan VK4KSS, has written a brief history on page 34, for the benefit of you, the readers of AR, may make yourself eligible to join the dignified list of recipients.

Amateur Radio is always in need of a steady supply of articles for publication, whether they be short technical tips or long technical articles; even interesting anecdotes. Whilst articles on advanced and new techniques are needed, it must be noted that new amateurs and novice are often ignored in important good basic items which the "seasoned amateur" may class as too basic for AR. So, write-up that project that has worked for you, and突然 an enormous appetite for a well-balanced and varied diet.

Preparing an article for Amateur Radio is simple. Just commit your thoughts to paper as you work. Drew VK0UY, says Direct Conversion QRP is a real challenge, but do not be afraid to challenge the air. Manuscripts may be clearly hand-written or typed original copies (no photocopies please, as frequently the photocopier prints a blank in a crucial position). Include all information, diagrams, graphs and instructions for constructors to make their own DC receiver for 80 metres. The Technical Editors are pleased to introduce a new regular column, titled Technical Mailbox. The column will endeavours to answer readers' queries relating to amateur radio, and the first regular column will be published on page 51. All readers are welcome to make use of this column.

Gil VK3C5, has written a very interesting article on electronic keysers in very basic, layman's terms, see page 40. Gil is a relative newcomer to CW and his enthusiasm for the mode is contagious. Gil, for all you CW enthusiasts, Convex Receivers are here to stay and gives an insight into the principles of operation of such receivers on page 34. Next month, Drew will include full diagrams and instructions for constructors to make their own DC receiver for 80 metres.

DEADLINE

All copy for inclusion in the November 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, by the latest, by 9am, 22nd September 1986.
**KDK-FM 240 HAS BEATEN THE DOLLAR**

With spectacular mobile simplicity this unique 2m FM radio is a pleasure to own.

Write for colour brochure.

**Only $579**

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The Azden PCS-5000 features unprecedented wide frequency coverage. 20 channels of memory, two separate memory banks with separate or simultaneous scanning, two ranges of programmable band scanning, up to 11 non-standard offsets, built-in PL tone generator, and much more.

**ONLY**

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The top of the line communication terminal for amateur and professional applications, it opens the world of CW, RTTY and new dual Amotor.

**THE TETA 5000E is the new state of the art micro computer controlled communication machine. Write for specifications.**

**$1699**

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The FXR-550 decodes facsimile transmissions such as weather maps, weather forecast carbon cards and fax broadcast available through public facsimile broadcasts. The FXR-550 provides outputs for monochrome or RGB monitors and a dot matrix printer. Speed is automatically set up by provided sensor. The satellite picture will be displayed in 8 shades of monochrome. Audio monitor circuit is built in.

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Everything Built In — Including Software. Nothing Else To Buy!

**RTTY, BIT INVERSION (RTTY), ASCII, AMTOR MODE A (ARQ), MODE B (FEC AND SEL), MODE CW, ANY SPEED, ANY SHIFT (ASCII AND Baudot).**

**$699**

**TWO NEW CODE CONVERTERS FROM TELEREADER**

Now you can monitor all short wave services and transmission codes such as CW, RTTY ASCII AMTOR and SSTV. All you need is a good communication receiver from EMOTATOR and the whole world of exciting signals is at your fingertips.

**CWR-880 with vertical front panel**

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**PACKET REVOLUTION**

**PK-64 & PK-80**

**$760**

**$515**

Both in stock

Work Packet, RTTY, Amotor and Morse with C-64 or C-128. Hardware and Terminal Software included.

PK-80 can be interfaced with any ASCII Terminal or PC and Standard Terminal Software. Included.

**HALL CT 2200 & KB2100**

Interested in CW-RTTY-HSC11 mode of communications? This RX/TX HAL 2200 is all you'll ever need. Write for more Tech Info. Reg. Price $1790 Special $1190

**ATTENTION ALL JRC OWNERS**

If you have an NRD-515 receive — Grab our below cost memory modules at $100

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Full Range of Kenpro, Cre-ate, Emotor & Daiwa

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**NEW STORE & HEAD OFFICE:**

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**NEW STORE & HEAD OFFICE:**

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**$500**

**End of Terminals.**

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**$500**
Waverley Amateur Radio Society

The accompanying photographs were taken at the Waverley Amateur Radio Society around 1920 and contributed by Gordon Thompson VK2AVT.

Above
Back row from left: Eric Lavington; Maurice Anderson; F Geddes Snr; Bill Holsgrove; Jack Gordon; Frank Harvey; unknown.
Front row: Neville Ruby; Dan Williams; Allan Burrows; Gordon Thomson; unknown.
Seated: Bill Lawrence; unknown.

Below
Back row from left: Bill Lawrence; unknown; Dan Williams; Les Holsgrove; Frank Geddes Snr.
Front row: Neville Ruby; Frank Harvey; Maurice Anderson; unknown; Allan Burrows; Eric Lavington; Jack Gordon; Gordon Thompson; unknown.

Editor’s Comment

A FEATURE BEGINS, ANOTHER RETURNS

At our Publication Committee meeting for July the idea was proposed by one of the Technical Editors that a regular monthly feature be introduced under the title of “Technical Mailbox.” We are happy to present the resulting first instalment this month.

Initially, we are providing answers to a backlog of questions which have surfaced from time to time, but we hope that soon you, our readers, will send in to us your questions on various technical topics. Replies will be published on the “Technical Mailbox” page more or less in the sequence in which the questions are received. Of course, some problems may require more research than others to enable adequate answers to be prepared, so these may be delayed a little longer.

As you will see when you read the first instalment a humorous approach has been adopted, but this by no means implies any lack of serious technical “know-how”. Many facts are impressed more firmly on our memories when accompanied by a little humour.

One restriction will apply to the subjects to be covered. We would prefer not to become involved with “nuts and bolts” type fault-fixing of specific commercial equipment; but problems of a general kind which may be encountered with any make or model will be addressed. Subject to this limitation, don’t hesitate to write in to “Technical Mailbox” and try out our experts!

Re-commencing this month, we once again feature an EMC Column. Hans VK2AOU, is an acknowledged international expert on the subject, and is in a unique position to give us the benefit of the latest developments in this area from West Germany. In that country, technical and legislative measures to promote compatibility are possibly more advanced than anywhere else in the world. It is likely that some of your “Technical Mailbox” problems may involve interference. If so, we can probably advise in this area also, perhaps with help from Hans if the Technical Editors find their expertise is overtaxed.

In all cases, please don’t expect miracles to occur overnight! Our unavoidable six-week lead time, plus necessary time to research the problem itself, implies at least a two-month delay between receiving your inquiry and seeing the answer in print. But give us a try! We look forward eagerly to seeing your first batch of problems on our desks!

Bill Rice VK3ABP
Editor

THOUGHT FOR THE MONTH

A change in attitude is always an option.
Cover Story

HMAS CASTLEMAINE

The CASTLEMAINE AWARD has been created to celebrate the 75th Anniversary of the Royal Australian Navy and the 45th Anniversary of the launching of the HMAS Castlemaine.

The Royal Naval Amateur Radio Society (RNARS) was founded in the United Kingdom in October 1960, with the purpose of gathering together all radio amateurs who had any connection with the Navy or its allied services.

Headquarters of the Society is situated at the Royal Naval Signal School, HMAS Mercury, in Hampshire, UK. Since its formation, membership has been extended to members of the Merchant Navy, including associates in foreign Navies and Merchant Service. There are now over 3000 members world-wide.

Upon joining the Society, members are issued with an official RNAHS number from Headquarters.

The flagship of the RNARS is the HMS Belfast which is now a floating museum, permanently moored on the River Thames between Tower Bridge and London Bridge.

Flagship of the Australian Branch of RNARS is the HMAS Castlemaine, which is owned by the Maritime Trust of Australia. Castlemaine is moored at Gem Pier, Williamstown, Victoria, and has a museum on-board where visitors can inspect a fascinating collection of relics and pictures relating to Australia's maritime heritage.

The RNARS is associated with the ship and have been responsible for restoring the Wireless Office from which an amateur radio station, VK3RAN, is operated.

Bill Tresize VK5RA, an original crew member of HMAS Castlemaine, photographed recently in his shack. Bill served aboard Castlemaine throughout WWII.

RNARS members take part in JOTA each year, and encourage Sea Scouts and Guides to foster relationships with their counterparts throughout Australia and overseas.

As a special effort so that amateurs world-wide can attain the Castlemaine Award, Victorian members of RNARS are on air as frequently as possible during 1986, the 75th Anniversary of the Australian Navy. The call sign is operational on weekends and public holidays, and there are special SSB and CW nets on Mondays and Tuesdays. Net frequencies are:

3.613 MHz — Mondays at 1030 UTC
3.527 MHz — Tuesdays at 1030 UTC
7.190 MHz — Sundays at 0300 UTC

(The RNARS is also associated with HMAS Diamantina which became operational as VK4RAN this year).

HMAS Castlemaine, a Bathurst class corvette/minesweeper, was built at Williamstown, Victoria, and commissioned in 1942. She served with distinction in the northern waters during WWII doing some 117,000 miles on war service.

Following her commission she was engaged escorting convoys between Melbourne and Sydney, and later Townsville to Port Moresby.

In early November 1942, she sailed for Betano (Timor) to embark soldiers and refugees under cover of darkness. Later the same month while in company with HMAS Armidale, both ships were attacked but escaped unharmed.

In July 1943, after 327 days of almost unbroken sea service Castlemaine was refitted in Sydney. She then recommenced escort work in late August. She was kept busy escorting vessels and carrying troops, stores and mails until mid-1944 when she was re- fitted at Adelaide.

She was then kept busy operating a survey unit until she was despatched from Darwin on August 16, 1945 to Morotai, Subic Bay (Philippines). She arrived at Hong Kong on the 29th, where patrol work and mine clearance was carried out with the 21st and 22nd minesweeping flotillas.

HMAS Castlemaine returned to Melbourne on December 16, 1945.

She served as an immobilised training ship at HMAS Cerberus during the 1950s and 60s and was towed back to Melbourne for restoration as a museum ship in June 1974.

Any readers who feel they may qualify to become members of the Society are welcome to contact any members of the RNARS on air or direct to the Australian Branch Manager, Frank Welsh VK3BPV, 13 Central Avenue, Mooroolbark, Vic. 3138, or the Group Manager, Margaret Nally VK3QU, Box 144, Elwood, Vic. 3124.

See also page 51, Amateur Radio July 1986, for details of the Castlemaine Award.
HISTORY OF THE AL SHAWSMITH JOURNALISTIC AWARD

Every year the Publications Committee selects from the articles published that year three authors who are considered to merit awards for the quality of their work. We have mentioned previously the Higginbotham Award (for meritorious service towards amateur radio), and the Technical Award (for the best technical article or articles). The third is the Al Shawsmith Journalistic Award, the title of which is very nearly self-explanatory.

Recently, however, its founder (Alan Shawsmith VK4SS, who is official historian to the Queensland Division) expressed doubt about whether the Award was well-enough known. We agreed with him that although it was still serving a very useful purpose perhaps some more publicity would encourage more writers to contribute generally-interesting articles to AR, so Al has now sent us this account of the Award's origin.

"The idea of ASJA was born after an unexpected visit by a most interesting Old Timer to the shack. On his departure I cogitated that almost all the amateurs I had met over the years had at least one interesting story to tell — be it in human relations, DXpeditioning, adventure, or electronics generally. How was it that so little of this material ever found its way to an Editor's desk?

"In an effort to entice more to put pen to paper, the ASJA was created. Of course no one can know if it has had any catalytic effect on the number of articles or stories subsequently sent to AR magazine, however, from the feedback to hand, it seems to have been well received. Consequently, I'm most happy to continue the award.

"Not everyone has the ability to commit their thoughts to paper in a rational manner. This is an art form in itself. If you have anything that you feel is of sufficient reader interest on any of the above topics, submit it to the Editor yourself or enlist the help of another to do so. This is the only criterion required."

To round off the story, and perhaps to show those with a few years' files of AR what sort of articles have won the Award, here is a list of winners since its inception;

1973 Syd Molen VK2SG "Las Balsas"
1974 Don Marshall VK4ZAF "Brisbane Valley Flood Disaster"
1975 Bill Rice VK3ABP "On Eyre"
1976 B J Morgan VK7RR "A Repeater for Southern Tasmania"
1977 Max Dawkins VK3TR "Some Field Station"
1978 Peter Arriens VK1PA "The Solo Voyage"
1979 Terry Clark VK2ALG "The Living Legend"
1980 Eddy Rooms VK4AER "Radio for the Cruising Yachtsman"
1981 Chris Long "Vale Gil Miles VK2KI — Vale History"
1982 Alan Campbell-Drury VK3CD "Mayday"
1983 Max Hull VK3ZS "Pioneers of AR in Aust — Max Howden"
1984 Reg Glanville VK2ELG "Clandestine SWLing"
1985 Marlene Austin VK5QO "History of the VK5 Division"

The Award has always comprised an attractive wooden plaque, plus an amount of money, originally $10. This was raised to $15 in 1976, $30 in 1981, and now stands at $100. Who will win it in 1986?
In part one, a number of equations were given which are the basis of the basic program presented here in listing 1.

A few general comments are needed before we begin the discussion on how the program works. Firstly, as it stands, the program is written for the pseudo MSX Basic of the SVI 318/328 and as such is not directly applicable to such common machines as the Commodore 64 or Microbee. While versions have been modified to run on these machines, it is beyond the scope of this article to describe exactly how this conversion was done. If sufficient interest is shown perhaps this can be the subject of a future article. In the meantime, the program as shown should run with very minor changes on most machines that run a later version of Microsoft Extended Basic.

For example, a version when directly ported across to an Epson PX-8 worked with no changes other than those in the graphics area to cope with the small LCD screen. It should also be noted that different Bics on different machines will produce slightly different results. This is mostly due to the differences in accuracy of the supplied functions and the number of significant digits used along with the machines dynamic range; ie difference between smallest and largest number.

Previously, (References 3 and 6), Fortran has been used on large computers to solve array problems. One of the reasons for this is that it will become obvious to any user of this Basic version, in that it is very slow. For example, a three element array can take up to 25 minutes to calculate true directive gain, or 60 seconds to just calculate the impedances. This should not overly dismay the amateur but, the professional would find the delays excessive. In order to overcome this, in part, the program is structured in a menu driven format which allows the amateur some control of a trade off between accuracy and time taken.

SECTION 1 — INPUT PARAMETERS
This section, up to line 220, collects data on the array. Unless otherwise stated, all dimensions are input in metres, and all angles in degrees. The elements are positioned on the co-ordinated plane as specified in Part 1, on the XZ plane; ie Phi = 0. The preferred direction for straight ahead, or the front of the array is 0 and the back 180.

SECTION 2 — IMPEDANCE CALCULATIONS
This section and Listing 1, calculates the self and mutual impedances of all array elements. It does this using the equations given in Reference 1 which use two functions called sine and cosine integrals. These two functions are evaluated by subroutines at lines 15000 and 14000 respectively. More details on this will be given in a later article.

SECTION 3 — COMPLEX EQUATION SOLVER
Once the impedances have been found, they are assembled into a number of simultaneous equations. The simultaneous equation solver proper is contained in subroutine 40000, however, as standard Basic cannot directly handle complex numbers, the rest of the code in this section, lines 990 to 1700, is involved in manipulating the equations into twice as many real equations.

SECTION 4 — THE MENU
Once the equations have been solved, control is handed to a menu to decide what to do next. This section, lines 1480 to 1520 and subroutine 11000, offer a number of alternatives and some comment should be given on each.

1. Input Impedances — Subroutine 19000. This option provides a quick version of front to back, assuming that the front is at Theta equals zero and the back at Theta equals 180.

2. Change Some Values — Subroutine 22000. Here the user is given the option to go back and change or vary some parameter to see its effect. Note: this routine does not recalculate, after all changes have been made, it will still be necessary to select option (8) and thus recalculate all values. Failure to do this invalidates all results.

3 and 4. Plot E and H Plane — Subroutine 23000 and 24000. As discussed in Part one, the E and H plots show the array pattern. This option gives only the bare bones of the possible graphics routines, as most other machines will have differing modes, etc. As it stands, once a complete pattern has been plotted, the operator must hit any key to continue.

5. Calculate Gain and F/B — Subroutine 25000. This is the one that takes the time. It must do the numerical integration spoken of in Part one, over the surface of a sphere. As it stands, it does this in 10 degree increments and, on the SV1318, it takes about 25 minutes for a three element array. This routine is however totally arbitrary as to the spherical surface these parameters can operate on. This means that no matter what strange configurations are used, the correct answer will eventually be found.

6. Print Currents — Subroutine 26000. This option shows the complex currents flowing in each element.

8. Re-Run — Subroutine 22300. As mentioned previously, this is used in conjunction with option 2 and 10. Option 2 can be chosen any number of times with no other routines between. It is only necessary to choose option 8 before choosing any other option after a series of options 2s or 10s.

9. Review an Element — Subroutine 22200. As the name suggests, this just lists an element attributes.

10. Change Frequency — Subroutine 22400. This routine is similar to 2 in most respects that it changes the test frequency. Once again it is necessary to option 8 after 10.

11. Quick Gain — Subroutine 18400. As the name suggests, this is a very much quicker version of option 5. It does this by assuming that the antenna pattern is symmetrical about the Z-axis and, only performs the integration over one quadrant. For most Yagi antennas, ie with elements all in the Z-plane, this routine will produce very similar results to option 5.

12. Quick F/B — Subroutine 18700. This routine provides a quick version of front to back, assuming that the front is at Theta equals zero and the back at Theta equals 180.


In the next part, more details will be given on implementing the program on a microcomputer as well as some of the results that can be obtained.

REFERENCES:

Paul McMahon VK3DIP 47 Park Avenue, Wattle Glen, Vic. 3096.
```
1100 REM GAUSS 14000
1105 GO To 16500
1110 PRINT "(1) INPUT IMPEDANCES (1) QUICK GAIN"
1120 PRINT "(1) INPUT CHANGE SOME VALUES (1) QUICK F/B"/
1130 PRINT "(3) CAL GAIN AND F/B"/
1140 PRINT "(4) CAL Cਬ₀ AND DESCRIPTION"/
1150 PRINT "(5) RECAST VOLTAGES"/
1160 PRINT "(10) CHANGE MORE"/
1170 RETURN
1180 REM RETURN

1200 REM FOR ELEMENT "(1)" INPUT
1210 PRINT "(1) INPUT ELEMENT (YES/NO)"
1220 IF LEFT*<00*,1)"C" THEN 1300
1230 INPUT "YOU WISH TO REVIEW OR CHANGE"/
1240 IF LEFT*<00*,1)="N" THEN 2000
1250 IF LEFT*<00*,1)="Y" THEN 1300
1260 RETURN

1300 REM FOR ELEMENT "(1)" INPUT
1310 PRINT "(1) INPUT ELEMENT (YES/NO)"
1320 IF LEFT*<00*,1)="Y" THEN 1300
1330 INPUT "YOU WISH TO REVIEW OR CHANGE"/
1340 IF LEFT*<00*,1)="N" THEN 2000
1350 IF LEFT*<00*,1)="Y" THEN 1300
1360 RETURN
```

RESTRICTING THE CANADIAN AMATEUR SERVICE

Following are the recommendations made by the CRA. and the CAPP, Canada's two national organisations.

Permit home-built equipment for all classes of certificate.

Use no-code entry level certificate, Certificate B, to attract newcomers to the amateur service.

Certificate B on 40 hours of study of basic electronic theory, basic electronic circuits, receiving and transmitting systems, antennas and propagation, station set-up and operation, interference prevention, and radio regulations.

Allow holders of Certificate B to use up to 100 watts input with all modes on amateur bands above 30 MHz.

Offer attractive incentives such as 250 watts input, and CW and RTTY on amateur bands below 30 MHz, to encourage holders of Certificate B to work for a seven words per minute Code Endorsement.

Also, offer phone in the 28-29.700 MHz band, to encourage holders of Certificate B on 20-30 hours of study of basic electronic theory, basic electronic circuits, receiving and transmitting systems, antennas and propagation, station set-up and operation, interference prevention, and radio regulations.

To work for a seven words per minute Code Endorsement.

The performance of Australia was second only to France in the introduction of Videotex Information Services. Telecom's Viatel service has 16,000 users and more than 200 independent organisations are providing information to the service.

THE JOY OF BEING AN EDITOR...

Getting out this journal is no picnic, if we don't we are criticised. If we print jokes people say we are silly; if we print them the journal is filled with junk, if we don't we are too critical.

We are too lazy to write them ourselves; we don't appreciate true genius...
NEW COLEMAN BEAMS.
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- GR210, 10 el on 144 MHz band
- 603Y, 605Y, 606Y 52 MHz beams

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Since work began on the above, it has been ascertained that 5 MHz is often used within the industry in lieu of 10 MHz. Does this imply that the lower frequency is more stable, or is it merely economic consideration? My opinion is that it is a little of both!

The basic accuracy and stability of the proposed generator will be governed by the reference. Hence, it was decided to concentrate on the crystal oscillator and develop it as far as practical.

Most of the amateur radio type literature tends to treat quartz oscillators fairly lightly. This gives the impression that their design and subsequent construction is relatively simple. Nothing could be further from the truth, as the author discovered. This, I might add, at the cost of considerable time and pocket money.

Having got through the preamble, it is now time to get down to the nitty gritty. Firstly, what circuit would be used? It was noticed that a lot of equipment uses an oscillator based on IC gates. The only external components required are sockets for both the crystal and IC, which was somewhat masked by the pre-assembly activity. Now, what can heat up in such a low power circuit? Neither smoke or charring being produced varied the temperature sufficiently to move the frequency. The second crystal (number 2) behaved in a similar manner. Placing the oscillator into a cardboard box eliminated this effect quite nicely.

LESSON NUMBER ONE

Open type construction is definitely not conducive to good stability in oscillators. The nest problem to be addressed was the rather long and uncertain warm-up period, which was somewhat masked by the previously mentioned problem. This erratic operation appeared to be caused by some thermal effect. Now, what can heat up in such a low power circuit? Neither smoke or charring being visible meant that it was time to introduce the good old "calibrated finger" technique.

This was poking hither and thither around inside the box and it eventually landed onto the 7400, which was quite warm.

The finger in contact with the top of the IC acted as a heat sink. As its temperature dropped so did the frequency. The fitting of another 7400 did not improve things, so a 74LS00 was tried. This lower-powered device produced less heat and did not effect the frequency as much. However, the drift was still quite unacceptable!

LESSON NUMBER TWO

The active element can, and does have an added virtue reaction on the oscillator. Well, how to proceed from here? Further work on the drawing board and more reading was required.

It was learned that parallel mode oscillators seem to be intrinsically more stable than series versions. It appears as though most simple and "on chip" oscillators are of the series type.

These are mainly used where the stability requirements are not so stringent. Hence, most of the cheaper rocks advertised and sold locally are cut and calibrated for series mode at 25 degrees Celsius. More of this later.

DEFINITIONS

At this stage, a brief explanation of the terms serial and parallel modes will be given.

The generally accepted equivalent circuit of a quartz crystal is shown in Figure 2a, where Co represents the static (shunt) capacitance and is the sum of the capacitance between the electrodes and all of the other strays. The R, L, and C, network is known as the motional where C, is the motional capacity of the blank. L, is a function of the mass and the R, is the total losses.

![Figure 1 — Series Mode Oscillator using TIL Gates.](image)

![Figure 2 — Equivalent Circuits of a Crystal](image)

**FORMULAS**

\[ L_1 = \text{Motional Inductance} = \frac{1}{4\pi^2 f_s^2 C_0} \]

\[ C_1 = \text{Motional Capacitance} = \frac{2(C_0 + C_s)\Delta F}{f_s} \]

\[ \Delta F = \text{Change in Frequency} = \frac{F_c C_1}{2(C_0 + C_s)} \]

\[ Q = \text{Quality Factor} = \frac{1}{2\pi f_c R_1} \]

\[ R = \text{Equivalent Series Resistance} = \frac{2\pi f_c L_1}{Q} \]

\[ C_s = \text{Shunt Capacity} \]

\[ C_L = \text{Load Capacity} \]

\[ C_1 = \text{Total Capacity} \]

**SERIES RESONANCE (FS)**

Other names are the Motional Resonance of zero point and it occurs when XL1 equals XC1; ie
At this frequency the reactances cancel, hence the impedance is set by the Equivalent Series Resistance (ESR), and is of course resistive. Refer to Figure 2b. It is worth noting that series types of circuits will continue to oscillate when the crystal is replaced with a capacitor. The frequency being that at which the circuit has the greatest gain.

**PARALLEL RESONANCE (FP)**

There is another frequency at which a crystal looks resistive and this is when $\omega L = \frac{1}{\omega C}$; ie third, fifth, seventh, etc. This, or anti-resonant frequency is given thus:

$$FP = \frac{1}{2\pi \sqrt{L_2 C_1}}$$

The equivalent circuit for this condition is shown in Figure 2c. This point is also known as the pole. Hence the expression "FP.'

When a crystal is operating near parallel resonance (FP) it will look inductive in the circuit. Some texts therefore refer to the Inductive Mode in lieu of parallel. Its impedance is maximum at FR. A change in circuit values will pull the frequency being that at which the circuit has the least gain.

Now refer to Figure 3. Notice that series resonance always occurs lower than the parallel frequency. The variation can be between say one and 10 kHz depending on cut, manufacturer, etc. It is not generally realised that a crystal calibrated for the parallel mode may generally be used for series providing that a "suitable trimming C" is employed.

However, the converse does not apply as was demonstrated by the performance of crystals one and two.

**POLE ZERO SPACING**

Figure 3 demonstrates the frequency versus reactance characteristics of a quartz plate. The pattern repeats at each overtone frequency; ie third, fifth, seventh, etc.

**COLPITTS OSCILLATOR**

Having digressed a little, let us get back to our loading problems. It transpires that "parallel" circuits can be designed so that the active device has a minimal affect on the oscillator frequency.

The well tried and proven Colpitts circuit was chosen, so out came the 7400s. Put them in the junk box for future digital projects. Figure 4 shows a typical circuit and gives typical values, etc.

Almost any small signal transistor may be used for Q1, although higher gain units will allow greater stability. The circuit shown in Figure 4 was roughly put together and worked first try. However, the frequency could not be pulled lower than about plus one kilohertz from that desired. Crystal number two performed similarly.

For the purist (myself included) further improvement may be made. The method suggested is to add another transistor, Q2, and connect both into a Darlington configuration. The idea is to achieve a much higher gain and input impedance, thus making possible the use of larger values in the capacitor divider. The upper limit now being around 1.0 nF effectively swamping the reaction of the active devices on the oscillator frequency. Refer to Figure 5 for details.

At last the great day arrived — the little package containing crystal number three arrived. The new crystal was soon installed into the latest oscillator. A quick turn of the trimmer and the thing was running on 10,000,000 (indicated), whilst still exhibiting excellent stability. At this stage of development it would probably be satisfactory for most amateur requirements. The frequency shift had, by now, been reduced to an erratic ± few parts in 10⁷; ie several hertz in 10 MHz.

**TEMPERATURE PROBLEM**

Now why is this variation? The only uncontrolled parameter appeared to be temperature. Investigations along these lines were commenced. The requirement being a variable heat "hot box" and a thermometer. The hot box (oven) is made up as follows. Obtain a small cardboard box (about 100 x 60 x 60 mm) and make three suitable holes in the lid. One in the middle for the thermometer and
the others approximately 40 mm away on either side. The heater connections come out through one, and the oscillator wires, the other. Next, four 4.7 ohm wire wound resistors are obtained and located vertically in the box at the centre of each side. Bend the leads out of the way and then connect each resistor in series to give a total value of 19 ohms. Join an insulated wire to each end and thread same through the designated hole. Place the oscillator into the box and feed its associated cables out through the other hole. Replace the lid on the box, push thermometer into position and power the oscillator. A zero to 25 volt power supply is connected to the 19 ohm heater.

The PSU is now switched on and set at 20 volts, corresponding to about 20 watts dissipation into the hot box. The temperature should now rise steadily and if it reaches 80 degrees Celsius, all is well.

However, if not, the heater resistor will require alteration. Assuming 80 degrees Celsius is obtained, switch heater off, allow oven to stabilise for say 10 minutes. Now, record heater voltage, temperature and frequency. Switch power back on, reduce output to 19 and do the recording bit again. Repeat the process at one volt decrements right down to zero.

A graph of the frequency varies temperature should now be drawn using an easily read scale; ie 1” = 10 degrees Celsius and 1” = 10 Hz. Refer to Figures 6 (crystal 3) and 7 (crystals 1 and 2) as examples. The voltage/temperature recordings will be of assistance for later measurements. The results obtained for crystal three were very instructive. Notice the linear drop from 25 to 44 degrees Celsius, followed by the sudden jump (10 Hz) with only one degree increase. At this point, the frequency slowly climbs until 70 degrees Celsius is reached then another rapid drop followed by a further increase. At this case the actual operating point would be above 20 degrees Celsius, it was decided that having verified the 20 degrees Celsius to 60 degrees Celsius part of the manufacturers specifications not to proceed with the low temperature measurements.

OPERATING TEMPERATURE — COMPENSATION ETC

Temperature compensation could well be used between 20 and 40 degrees because of the approximate linear drop in frequency. However, stability would be degraded with further increase. This is due to the compensating capacitors now being virtually “out of phase.”

Even though crystals one and two were discarded, it was decided to put them through a heat cycle. Refer to Figure 7 for the results, which over a limited temperature range, were surprisingly good. Observe the 27 degrees Celsius turn-over point and frequency change of only ±3000 Hz between 24 and 33 degrees Celsius. This ties in well with the 25 degrees Celsius operation mentioned earlier. Again, compensation could be used between 27 and 55 degrees Celsius.

However, TCXOS are fiddly, compensating components hard to come by and usually require individual adjustment, thus making life difficult for the constructor silly enough to follow in my footsteps.

Note the flat spot between 35 and 45 degrees, even a relatively poor controller set at 40 degrees would be adequate here as a ±5 degrees change would only change the frequency by just 10.000 Hz.

The degree of control attainable persuaded the author that temperature control was a must. The proposed operating point was arrived at as follows. Allow say a maximum summer shuck ambient temperature of 35 degrees plus. Add a further 10 degrees increase from associated circuitry, together with a fudge factor gives a total of say 50 degrees Celsius. The controller cannot work if set below the prevailing ambient.

Therefore, 55 degrees Celsius was selected and coincides with commercial practice. Yet another crystal (number four) was ordered, thus adding to my steadily growing collection of 10 MHz crystals! This one was specified as a type KBD40 10.000.00 (+ desired holder type), and having the following characteristics:

Cost — Expensive (Don’t tell the cook)
Operating temperature — +50 to 60 degrees Celsius
Temperature Stability — ±5 ppm
Calculated Tolerance — ±5 ppm
Local Capacity — 40 pF
Sealing — Resistance Welded.

When number four duly arrived it was given the good-old heat treatment. Figure 8 depicts the results of these efforts. Despite the rather poor performance at lower temperatures, it was expected on the basis of 80 degrees Celsius exactly as ordered an ideal for the proposed 55 degrees Celsius operating point.

Now, the controller must be servoed to allow for 25 degrees Celsius operation mentioned earlier. Again, compensation could be used between 27 and 55 degrees Celsius.

LESSON NUMBER FOUR

Ensure that the crystal is always used at its specified temperature.

Next month, Part 2 of this article will describe the construction, adjustment and performance of the temperature controlled crystal oscillator.

To be continued...

AEA SOLD

Antenna Engineering Australia (AEA) has been acquired by Kabelmetal Electro of West Germany.

AEA is a Melbourne-based company concerned with the design and manufacture of antennas, filters, diplexers, multi-couplers and associated equipment for communications, FM and AM broadcasting, television and nav aids from low frequency to microwave.

From Electronics News, July 1986

VK SUPPLIES MODEMS TO JA

Datacraft has made significant sales of its Australian-designed Telelink modems to the Tokyo office of an international bank.

Datacraft Telelink modems are designed to provide a cost effective solution to internal networking requirements, since they allow for simultaneous voice and data transmission, using existing PABX equipment and cables within a one kilometre range.

Datacraft’s export team is now evaluating the potential of the Japanese market as there is no comparable product available there.

From Electronics News, July 1986

ELECTRONIC CAMERA

A filmless still-camera that captures images with a computer chip and plays them back via a television monitor is expected to on sale soon.

The system, which uses floppy disks, also allows a photographer to send pictures over telephone lines.

Using a device called a transceiver, images sent over a telephone line can be reproduced using an inkjet printer.

The camera looks and acts like a conventional 35 mm camera, but instead of film, the image is captured using a special kind of chip called a charge-coupled device, which passes the signal to a 5 cm wide floppy disc.

Besides photo-journalists, the camera will be useful in law enforcement, construction, industry and science.
LEARN MORSE ON YOUR COMPUTER

Kevin Bond VK3CKB ex-VK3ZKB
57 Thomas Street, South Morang, Vic. 3752

Your computer can be an excellent Morse instructor.

It is available whenever you want to practice, sends perfectly spaced Morse, without interference or fading — but there are a few traps, as I discovered. This article may help others to avoid them.

After 18 years of holding a limited call, and recently becoming interested in home computers for sending RTTY, there arose a need to experiment over a distance too great for VHF. So the home computer, a TRS80 MC10, was put to use to learn Morse for the 10 WPM upgrading licence test. A program called Hamcode was found in the book TRS80 Colour Computer Programs. This was typed in, the unnecessary punctuation characters being removed, and used each day to practice. The 80 metre Slow Morse Broadcasts (on 3.550 MHz, from VK2, from 1930-2030 and VK5, 2030-2130 UTC), were used a couple of times, but at my location and on my untuned piece of wire for an antenna, the signals were noisy and faded out most of the time. (It was not until later when I actually got the full call that the station and antenna were improved, along with the signal!).

There seemed to be no speed standard and tapes all had their own characteristic rhythm and speed.

The program has a variable called T to change the speed and as my Morse speed improved, T was reduced to reduce the space between the characters. I modified the program to send random five letter groups continuously.

Some Morse tapes from various sources, mainly copied from tapes used by other full calls also provided practice while driving to work, but one thing worried me. This was the fact that there seemed to be no standard speed and the tapes all had their own characteristic rhythm and speed — therefore I did not know what to expect in the exam. Unlike serial computer data, where you know that at 300 Baud the bits are all exactly 3.33 ms long, nothing seemed to be written about a standard for Morse speed. I simply changed T on the Morse program so that I got 250 random characters in five minutes and assumed that this represented 10 five letter words per minute.

After about three months of practice exam-time came around. The receiving was a nightmare. I had never heard Morse like this before; all dashes and long dashes. (The letter "S" sounded like an "O" for example). The practice session was not long enough to re-adjust my brain. The sending was easy with the message being rattled out with 29 seconds to spare, and this was after only about one hour of practice using a key beforehand.

I acquired a tape and proceeded to analyse it on a digital storage oscilloscope.

Less than one week before the exam, I heard about the Morse Classes run by the WIA and I phoned the class instructor, Ron Cannon. He said he could send me a copy of a Department Computer Programs. This was typed in, the program has a variable called T to change the speed and as my Morse speed improved, T was reduced to reduce the space between the characters. I modified the program to send random five letter groups continuously.

Some Morse tapes from various sources, mainly copied from tapes used by other full calls also provided practice while driving to work, but one thing worried me. This was the fact that there seemed to be no speed standard and the tapes all had their own characteristic rhythm and speed — therefore I did not know what to expect in the exam. Unlike serial computer data, where you know that at 300 Baud the bits are all exactly 3.33 ms long, nothing seemed to be written about a standard for Morse speed. I simply changed T on the Morse program so that I got 250 random characters in five minutes and assumed that this represented 10 five letter words per minute.

After about three months of practice exam-time came around. The receiving was a nightmare. I had never heard Morse like this before; all dashes and long dashes. (The letter "S" sounded like an "O" for example). The practice session was not long enough to re-adjust my brain. The sending was easy with the message being rattled out with 29 seconds to spare, and this was after only about one hour of practice using a key beforehand.

I acquired a tape and proceeded to analyse it on a digital storage oscilloscope.

Less than one week before the exam, I heard about the Morse Classes run by the WIA and I phoned the class instructor, Ron Cannon. He said he could send me a copy of a Department Computer Programs. This was typed in, the...
of Communications 10 WPM tape, but would not have one ready until the following week. Anyhow, the computer dots and dashes are actually generated by the Micro Colour Basic program using the sound command.

The Morse characters, I discovered, were actually coming out at 19-20 WPM on my computer with excessive spacing between them. The dots and dashes are actually generated by the Micro Colour Basic command Sound PD where P is the pitch and D is the duration. Both P and D are integers from one to 255. D=1 is used for a 75 mS dot and D=3 for a 225 mS dash, much shorter than the DOC's 10 WPM.

Unfortunately there was no way to modify the program using the Sound command (which comes out of the speaker of the monitor television) to make the periods the same as the DOC standard. However, I wrote a simple machine language program to output the dots and dashes of exactly the right durations from the serial in/out port of the computer. Although not as convenient as the television, the output is "cleaner" as the television audio output envelope tended to be rather "ragged." The serial output is then used to gate on and off a simple audio oscillator which is used to drive either headphones, speaker or tape recorder for recording practice sessions.

Although the MC10 is not a particularly common computer, the program is listed below. Notes too, that DOC quote their examination speed as consisting of 12 WPM characters spaced out to an effective 10.

```
MACHINE LANGUAGE SUBROUTINE

ADDRESS INSTRUCTION LABEL Mnemonic Comment

20000 79 DOT CLRA 151,3 STAA 03 OUTPUT START OF DOT

134,65 LDA #65
189,78,64 DDD JSR DELAY DELAY=65*2.01
74 DECA 
134,1 LDA #1
151,3 STAA 03 END OF DOT
57 RTS

20016 79 DASH CLRA 151,3 STAA 03 OUTPUT START OF DASH

134,159 LDA #159
189,78,64 EEE JSR DELAY DELAY=159*2.01
74 DECA 
38,250 BNE EEE
134,1 LDA #1
151,3 STAA 03 END OF DASH
57 RTS

20032 198,255 DELAY LBD #255 DELAY=7*255*1.124us
90 CCC DECB
1 NOP
38,252 BNE CCC
57 RTS 7 CLOCK CYCLES
```

Machine Language Subroutine.
external oscillator because there is an inverter driving the serial output inside the computer. The instruction RTS (return from subroutine) causes the program to go back to the Basic program after the dot or dash is complete. The Basic instruction EXEC in lines 160 and 161 cause the computer to execute the machine language instructions starting at the address given.

USING THE PROGRAM

I found that once the characters have been learned using Option 1, the main use of the program for practicing alone is Option 4. Here random five letter and number groups are sent. The television screen is covered up and the characters written down. After say 50 groups are copied, the program may be stopped by pressing Break and the written work corrected. Another useful feature is Option 2, where you can get your wife to type in four lines from a book, etc, and the message put on tape to provide new plain language practice material. I was limited to only four lines with 4k of memory. With more memory the number in line 2000 could be increased to give more string space. By typing "opening bracket, space" at the start of the message, and "closing bracket, space" at the end of the message, (and), the commencing signal dah-di-dah-di-dah and ending signal di-dah-di-dah-dit will be sent.

The external oscillator is something I threw together on a piece of matrix board. The 555 is wired as an astable oscillator. The transformer eliminates any possible earth hum loops for the tape recorder input. The current drain is about 3 mA on standby and 15 mA keyed.

On the subject of Morse examinations, I found the articles in previous Amateur Radios very useful. (That terrible five minutes April 1984, and Pounding Brass February 1984). Some differences I found sitting the exam in Melbourne (at Camberwell) is that for the receiving exam there are two long benches with the audio fed down each via a cable. There are junction boxes every couple of metres which you plug the headset into. You can take your own comfortable headset but it must have a standard quarter-inch mono plug. If you use a stereo plug you only get sound in one ear. It also pays to have all your height, weight, etc, information handy as this must be written on the front of the examination paper.

In conclusion, I can say that practicing on nothing else but the DOC standard speed and trying to get down to zero errors consistently, I found that the examination was no trouble with no characters being missed that I know of, which was a great improvement on my first attempt.
use your IBM PC/XT (or clone) for RTTY

Bryon Dunkley-Smith VK3YFL
17 Chesney Drive, Ringwood, Vic. 3134

Computers are becoming common-place in homes these days, particularly in the homes of amateur radio operators. The IBM PC/XT has become an industry "standard" and with many other manufacturers producing low cost 'clones' of these machines, this machine has been chosen by many for home use also.

Many communications software packages exist for the XT family, but most cater only for information transmission using the ASCII format with seven or eight data bits at speeds ranging upwards from 50 Baud. The "standard" for RTTY transmission in Australia is the Baudot code which uses five data bits at a speed of 45.45 Baud.

Therefore, in order to use the XT family for RTTY a special communications package has to be purchased or written by the user.

The accompanying program listed here is written in 8088 Assembly language and is designed to allow the XT to operate as a full duplex teletypewriter utilising the main serial port. It is a simple program which does not include fancy features like split screens, type ahead facilities or automatic transmitter control, however, it is a program which may be used immediately or used as the basis of a program with more features. It does provide for the generation of hard copies by entering AP to log off the printer on and off as the AP DOS command does and also automatic transmission of a CR/LF combination on entry of a RETURN) from the keyboard or after the entry of 64 characters on a line, thus allowing typing of text to proceed continuously.

For those unfamiliar with Assembly language, the listing shown should be entered as a text file with the file name extension .ASM; eg RTTY.SRC using EDLIN, WORDSTAR (non-document mode) or your favourite text editor, and then assembled using ASM.EXE or MASM.EXE (as supplied on the DOS disk) to produce an object code file; eg RTTY.OBJ. This must then be processed by Link.EXE to produce the executable file; eg RTTY.EXE.

NOTE: Since completing this article the author has developed the program further to indicate split transmission and receive screens, together with a transmit "type ahead" buffer. As the source code is too long to reproduce in AR he would be happy to supply the code to readers who supply a disk together with return postage or by phoning (03) 876 2686 using Christensen Protocol at 300 Baud.

The listing shown should be entered on a text editor, then assembled using ASM.EXE or MASM.EXE (as supplied on the DOS disk) to produce an object code file; eg RTTY.ASM using EDLIN, WORDSTAR [non-document mode] or your favourite text editor, and then assembled using ASM.EXE or MASM.EXE (as supplied on the DOS disk) to produce an object code file; eg RTTY.OBJ. This must then be processed by Link.EXE to produce the executable file; eg RTTY.EXE.

Many communications software packages exist for the XT family, but most cater only for information transmission using the ASCII format with seven or eight data bits at speeds ranging upwards from 50 Baud. The "standard" for RTTY transmission in Australia is the Baudot code which uses five data bits at a speed of 45.45 Baud.
HOW WILL AMSAT PHASE IIIC ACHIEVE ITS ORBIT?

Now that OSCAR-10 has functioned so reliably for two-and-a-half-years, another satellite launch DL-SAT Phase 3C is expected in Autumn 1986 (Spring 1986 in VK). This satellite is an improved follow-up version and is being constructed with substantial financial assistance by the Deutscher Amateur Radio Club (DARC) DM 250,000, and the West German Federal Ministry for Research and Technology DM 750,000.

OSCAR-10 was launched in June 1983 with an Ariane-2 rocket but the launching of DL-SAT Phase 3C is planned with a new European-Rocket Ariane-4 (see Figure 1). Ariane-4 is 11 metres taller than Ariane-2, and can carry a 4.2 ton payload to a sun synchronous 800 km high orbit. This is being achieved with four additional rocket motors (two using solid fuel and two using liquid).

Three payloads are planned for the October/November (?) 1986 launch. One further METEOSAT, a PANAMSAT (American Communications Satellite) and the Amateur Radio Satellite, Phase 3C. Figure 2 shows the separation sequence of the various payloads. Picture 6 of Figure 2 shows the cylinder X, which holds the DL-SAT Phase 3C. The actual size can be seen in Figures 3 and 4.

The cylinder X, with Phase 3C is an independent unit after separation. Since the satellite will be ejected later, a separation sequencer was required, which was developed and supplied by AMSAT-DL. This sequencer is attached to the cylinder X and not to the satellite. The timing of the sequencer commences after the separation of the cylinder X from the transport container (level W). The ignition of the separating bolts — holding the clamping belt — takes place 3600 seconds later. Phase 3C is then ejected from cylinder X by three springs on the clamping belt.

Next, the magnetic satellite orientation system within the satellite places it in the correct position (Magnet-Earth acts as reference), and the 400 Newton rocket motor of the satellite is ignited (see
Figure 2 — The separation sequence of Ariane 4.

Figure 5.
This operation changes the inclination of the satellite orbit to the equator and lifts the perigee (point of closest approach to earth).

An inclination of 57 degrees is desired because the majority of users live in the Northern Hemisphere. (This means less than five degrees antenna elevation for VK2 to Europe QSOs).

Also, the argument of the perigee changes little at 57 degrees inclination, resulting in a nearly unchanging satellite orbit over a long period of time. The transponders will be made operational after the re-orientation phase (to point the antennas towards earth).

This project will give amateur radio further possibilities of making world-wide contacts via satellite. The RUDAK-Project offers new interesting scope for conducting digital communication (packet radio) via satellite and to gain valuable experience with a new operation technique.

Reprinted from CO-DL, March 1986. The original article was written by Werner Haas DJ5FQ and translated for Amateur Radio by Hans Ruckert VK2AOU

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Here is a clip-and-save chart that will save you lots of time while helping you to put up a variety of antennas. This article originally appeared in CQ Magazine, March 1986 and was written by George I Wagner KSKG.

In the past few years, I have had several opportunities to operate from a number of DX locations. In doing so, I have learned the importance of taking along the proper collection of tools, connectors, gadgets, and reference information to be able to make a quick repair or string up a needed antenna in an unfamiliar shack. Conversely, I have also learned the agony of lugging too much along, only to find it completely unnecessary and unused at the end of the trip.

The antenna length chart, which is the subject of this article, arose out of the need to have a convenient and ready reference, other than a weighty handbook, for measuring antenna lengths. This results from a number of experiences in trying to find a calculator, or a paper and pencil (typically in the dark and late at night), inevitable debates over what constants to use in the calculations, and finally the need to convert from feet to metres when only a metre tape was available, or vice versa. On two separate occasions I have discovered 160 metre dipoles of totally wrong lengths, and on an expedition to OJO in 1982, OHORJ and I spent many hours calculating, cutting, and erecting 40 and 15 metre delta loops. This chart would have been a valuable asset in those circumstances.

This chart was developed after a brief reference to the various antenna handbooks in the shack, and a quick refresher on the current amateur frequencies, especially in the new 12, 15, and 30 metre WARC bands. The formulas used in the calculations, shown at the bottom of the chart, are based upon standard assumptions for wire antennas supported by end insulators.

The chart was developed using Visicalc (a registered trademark of VisiCorp), an electronic spreadsheet program on an Apple II+ computer. However, any spreadsheet program on a personal computer could have been used to do the job.

ANTENNA LENGTH CHART

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>WAVELENGTH — FEET</th>
<th>WAVELENGTH — METRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHz</td>
<td>1/4</td>
<td>1/2</td>
</tr>
<tr>
<td>1.8</td>
<td>128.97</td>
<td>259.75</td>
</tr>
<tr>
<td>1.85</td>
<td>128.97</td>
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<td>123.04</td>
<td>246.08</td>
</tr>
<tr>
<td>3</td>
<td>66.79</td>
<td>133.58</td>
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<td>64.94</td>
<td>129.87</td>
</tr>
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<td>63.18</td>
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<td>123.04</td>
</tr>
<tr>
<td>5</td>
<td>59.94</td>
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<td>58.44</td>
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<td>23.38</td>
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<td>16.41</td>
</tr>
<tr>
<td>26</td>
<td>8.06</td>
<td>16.12</td>
</tr>
</tbody>
</table>

FORMULAS USED

1 metre = 3.281 feet
Length of 1/4 wavelength antenna in metres =

\[(300 \times 0.95 \times 0.5) \times \text{Frequency} \quad \text{(MHz)}\]

Length of 1/2 wavelength antenna in feet =

\[(300 \times 0.95 \times 0.5) \times 3.281 \text{feet/frequency} \quad \text{(MHz)}\]

NOTE: 1/8 wavelength + 5% is used for Inverted Vee Antennas.
1926 TRANS PACIFIC TESTS

During 1926, the WIA in Australia and the ARRL in America attempted to encourage interest among amateurs from both continents to see who could hear what and on which band. Following is the text of a letter written on a WIA letterhead by Ross Hull as Honorary Federal Secretary of the WIA, and also the information he supplied for amateurs.

Dear OM,

I am sending you the details of the big Trans Pacific tests which are being staged between May 23 and June 5. These tests will be the result of a long period of careful organising work with the American Radio Relay League, and I trust that you will do your part in showing the Americans that if no one else can be depended upon to co-operate with them in running a big test, the Australians certainly can.

When you have looked through the schedule I want you to send a card or radio to your Federal Delegate stating the divisions of the tests in which you intend to be actively interested. On receipt of this information the necessary log sheets will be forwarded to you.

1. To demonstrate to the world at large the fact that they are amateurs are. (The latter point is being questioned in many quarters).

**TEST A**

Aim — To discover the most reliable and effective amateur station in each of the Australian and American States. Further, to provide a qualitative comparison work for stations in the Western Hemisphere by checking the Wireless Institute's "A grade amateur station certificate.

Schedule — May 22 at 6 pm to June 5 at 6 pm.

1. Stations desiring to participate, upon applying to the Test Headquarters, will be provided with a passage of 500 words which must be transmitted to any station in America sometimes during the total period of the tests.

2. An accurate log must be taken on the forms provided for the purpose of the transmissions necessary to send the test passage. The dates and exact times must be stated together with details of any repeats necessary and a statement whether single or double sending was used.

3. The full details of power used in the transmission must be included. Approximate plate potential and current, together with details of the transmitter.

4. It is desired to obtain an 'A grade amateur receiving and transmitting station' certificate or if it is desired to compete in the competition of this test, it will be necessary to obtain 500 word test message from some American amateur station. The American station need not necessarily be the one to which your test message was transmitted.

5. Details of such reception must then be included on the log sheet together with a brief description of the receiver.

6. Stations not operating transmitters can forward a receiving log only. The reception of any one test message from America with an accuracy above 75 percent will entitle the operator to an Institute "A grade amateur receiving station.

7. All such logs and details must be forwarded to the test Headquarters before June 10.

If it is hoped that a trophy will be awarded by each State Division of the Institute to the station whose performance is adjudged the best from all aspects amongst the stations in that particular state. The Federal Executive of the Institute will also award a trophy to the station making the best performance of all Australian participants.

8. Those taking part in the test will be placed in consideration in judging this test will be — The total time taken to transmit the message and the method and speed of keying, the power of the transmitter, the location of the station and all other information supplied by the station participating.

9. In all activities of the tests the general working of the Australian stations will be listened to by several official observation stations.

**TEST B**

Aim — To establish definitely the hours during which reliable amateur communication can be maintained across the Pacific. Further, to gain detailed information as to the relative effectiveness of the 20 and 40 metre bands for Trans Pacific working.

Schedule — May 3 at 6 pm to May 29 at 6 pm; and also June 4 at 6 pm to June 5 at 6 pm.

1. In order to accomplish something useful in this test it will be necessary for Australian and American amateur stations on 20 and 40 metre bands to be on the air during the whole 24 hours. It will be very essential for more Australian transmitters to be on the air on 40 and 20 metre bands than have done so to date, before any useful comparison work can be accomplished.

2. Arrangements will be left in the hands of the Federal Delegate of the Institute in your State to provide for at least one station on 20 and one on 35 metres to be on the air during the 24 hours. In addition to signifying your intention of participating yourself this particular test to Headquarters, you should therefore get in touch with the Federal Delegate in your State, who will arrange with you for your schedule.

3. It will be necessary to watch on the whole periods it is desirable that at least receiving stations be on the lookout for American stations.

4. All logs of this particular phase of the tests should be forwarded to Headquarters before June 10, in order that the summary of observations can be gathered from all reports and mailed to America without delay.

**TEST C**

Aim — To stimulate interest in observations on waves as low as five metres.

Schedules — May 26 from 6 pm to 10 pm; also June 2 same times.

A plea has been made by the ARRL for the greatest possible activity in America over the wave lengths of the order of five metres during the time mentioned. The Institute is making the same plea in Australia and it can only be suggested that any experimenters with transmitters or receiving stations operating on approximately the wave length mentioned, should see that their stations are not inactive during the above periods. Should any positive results be achieved, even in working over short distances with other Australians engaged in calling America, full details of the working should be forwarded to Headquarters so that credit for anything can be correctly placed.

**TEST D**

Aim — To discover the Australian amateur station that can correspond with an American amateur station on three separate nights of the test period with the minimum total input power.

Schedules — Any three or more nights during the test period.

This “Miles per Watt” test is to be run on similar lines to the competition of that name at present in progress in America and being handled by the WIA in conjunction with the Jewell Electrical Instrument Co.

The Australian representatives of the Jewell Company have donated a prize of a Solid Gold Filigree Jewel Watch to be awarded to the amateur operating the longest distance communication as mentioned above with the lowest total input power.

As any rule governing this competition are contained in a circular prepared by the Jewell representatives. This can be obtained by writing to Headquarters.

If you have any sort of a short wave receiving or transmitting station in operation send along your name and address on a sheet of paper with the numbers of the tests you will be particularly interested in, and complete log sheets and details will be sent.

All communications to be addressed to:

ROSS A HULL
Hon Federal Secretary.
Wireless Institute of Australia. Box 3120R GPO
Sydney.

Contributed by Duane Foster VK2VE and Tim Mills VK2TM

The culminating occasion of these tests was the passing of 500 word messages in CW between the Australian and American stations. Those doing it successfully (over-heating of the CW plant) were awarded a fine certificate of about A4 size, which was signed by Hiram Percy Maxim, Phil Renshaw and the secretaries of the ARRL and WIA.

Do any of the old timers have any further information about these tests and particularly a list of participants?

Contributed by Dave Gray VK2DJ
Laboratory-grade L and Q meters cost thousands of dollars. Let's build an inexpensive L and relative-Q measuring unit for our amateur workshop.

How often have you been uncertain about the inductance of a home-made coil? There are times when we aren't sure of the core material we select from our parts supply — the cores do become mixed up on occasion, and we answered a question about the core permeability. Maybe we don't trust the A factor when winding a toroid and would feel more confident if we could measure the inductance of the completed coil. There are you who are fortunate enough to have access to a Q meter need not worry about building a home-made test unit. But, for those frugal souls, like the writer, who can ill-afford $250 for an old, used Q meter, or a few thousand for a new Q and L tester, we can build a satisfactory unit for a few dollars.

Many of us have used alternative inductance-measuring methods since becoming amateurs. This entailed using fairly crude techniques, such as placing a known-value capacitor in parallel with an unknown inductance, then using a dip meter to find the resonant frequency. The two known factors could then be used to learn the inductance value by using the appropriate equations. Approximations were possible with these methods. But, many of our projects call for fairly precise inductance values, especially in fixed-tuned RF filters. So, if you plan to use a meter that can be used for measuring inductance directly. This eliminates time-consuming follow-up calculations or monitoring the dip-meter operating frequency with a calibrated general-coverage receiver.

CIRCUIT COMMENTARY

Figure 1 contains a schematic diagram that shows the circuit for our project. Provisions are made for two popular inductance ranges — 1-10 H, and 10-100 H. More ranges can be added. This is discussed later in the article. Two oscillators are used in Figure 1. One operates on 2.5 MHz (100-1 H range), and the other is on 7.9 MHz (1-10 >H range). C2 and C9 are critical values for establishing the proper amount of oscillator feedback. The Xc of these capacitors is 150 ohms. Tuned transformers are used at the collectors of Q1 and Q2. Each transformer is terminated by a 56-ohm resistor to provide a fixed oscillator load. Fundamental crystals are used at Y1 and Y2.

Operating voltage and the RF output for the oscillators is selected by range switch S1. RF voltage is routed to C6 (main tuning), J1 and J2 through a 6.8- pF coupling capacitor. This light coupling prevents the transformer secondary windings and load resistors from loading the coil under test, which could ruin Q (unloaded Q) of the coil under test. This would cause low, broad- response meter readings. Light coupling (C8) is used between C6, J1 and J2 for routing the RF voltage to meter amplifier Q3. This helps to preserve the Q of the coil being tested.

A 2N4416 (Q3) serves as our meter amplifier. The word "amplifier" is a misnomer, since M1 indicates changes in current through the coil as it is tuned to resonance by C6. As the tuning capacitor is adjusted for circuit resonance, the RF voltage at the gate of Q3 rises, and this increases the FET current. So perhaps a more descriptive name for the Q3 stage would be "current multiplier." By this I mean, we are not amplifying the RF-input signal.

A 10-megohm gate resistor is used at Q3 to help maintain the high gate impedance of the FET. For example, if we used a 0.1-megohm gate resistor, this would set the actual gate impedance at 0.1 megohm, and that would tend to load the test coil.

R1 sets the sensitivity, and R2 is adjusted to zero the meter when there is no coil connected to J1 and J2. It is likely that an MPF102 JFET could be used at Q3. I used a 2N4416 because I had some of them on hand, and did not wish to make a 100 km round trip to buy an MPF102 at the nearest radio store!

HARMONIC TRAPS ARE NEEDED

An interesting problem arose while I was testing the circuit of Figure 1. Two peak responses were observed on each range. One peak proved to be the desired one, and the spurious peak response took place when C6 was moved toward minimum capacitance. Investigation with my dip meter (wave-meter mode), when it was coupled to the test coil, showed a strong response at the second harmonic of each oscillator — 5 and 15.8 MHz! The test coil was being tuned to the second harmonic, which enhanced the harmonic currents present in each oscillator. The simple cure is to install a series-tuned trap at the secondary winding of T1 and T2 (L1, L2, C3 and C5). Alternatively, a half-wave, low-pass filter can be connected between the transformer secondary and C7 of Figure 1.

ADDITIONAL INDUCTANCE RANGES

We may add a tester range for 0.1 to 1.0 >H by including these oscillator for 25-MHz operation. A suitable circuit is provided in Figure 2. An overtone type of oscillator is required, since fundamental crystals are not available for frequencies much above 20 MHz. Y1 of Figure 2 is a third-overtone crystal. A 50-MHz trap is used at the output side of T1. I tested the circuit of Figure 1 for use in this range by tuning the 7.9 MHz oscillator for third-overtone operation, and the results were good.

If you wish to cover the inductance range from 100 >H to 1 m, you may include another oscillator. It operates on 790 kHz. The circuit is given in Figure 3. This is a fundamental oscillator. The selectivity of T1 may be high enough at this frequency to preclude the use of a harmonic trap. I did not perform this test to determine if a trap was needed.

CONSTRUCTION NOTES

You may prefer to plan your own layout for the tester. The important matter is to keep the leads between the oscillator transformers (T1 and T2) and C7 as short as possible. Otherwise, use miniature RG-174 cable for the connecting leads. Similarly, the lead from C7 to C6 and J1 must be short. Keep the lead from C8 to Q3 short.

Figure 4 shows an interior view of my prototype unit. It reflects the "ugly construction" philosophy. Things were tacked together hurriedly in order to get the circuit operating. A finished model is planned.

The foundation for my tester is made from PC-board material. Double-sided PC stock was used for all but the front panel, which is made from single-sided board. The latter material was chosen to permit writing on the panel with an indelible marking pen. The copper around J1 of Figure 1 was ground away to a diameter of 100 mm to minimise stray capacitance to the copper foil.

R1 is a trimmer control that is soldered across the meter terminals. You may wish to use a panel-mounted control for R1. M1 in my circuit is a 200-µA edgewise
EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF). OTHERS ARE IN PICOFARADS (pF). RESISTANCES ARE IN OHMS; k = 1000, M = 1000 000.

SM = SILVER MICA

Fig 1—Schematic diagram of the two-range inductance checker. Fixed-value capacitors are disc ceramic or silver mica. Fixed-value resistors are 1/4- or 1/2-W carbon composition.

C1, C3, C4, C5—Miniature ceramic, plastic or mica trimmer.
C2, C9—See text.
C6—40-400-pF variable (State Street Sales no. 68C96-5V or equiv).
J1, J2—Terminal post for banana plug.
L1—Toroidal inductor, 1.7 μH. 24 turns no. 26 enam wire on Amidon T37-6 toroid core.
L2—Toroidal inductor, 6.8 μH. 40 turns no. 30 enam wire on T37-2 toroid core.

Fig 2—Schematic diagram of a 3rd-overtone oscillator for measuring inductances from 0.1 to 1.0 μH (see text). C1 and C2 are small mica, plastic or ceramic trimmers. L1 is 0.34 μH. Use 12 turns no. 26 enam wire on Amidon T37-10 toroid core. T1 primary is 0.6 μH. Use 15 turns of no. 26 enam wire on T37-10 toroid core. Use 3 turns for sec. Y1 is a 3rd-overtone, 30-pF load capacitance crystal.

Fig 3—Circuit for a low-range oscillator (100 μH-1.0 mH). C1 is a mica trimmer. T1 primary is 135 μH. Use 45 turns of no. 26 enam wire on Amidon FT50-61 ferrite toroid. Sec has 10 turns, C2 is a feedback capacitor. The value may require adjustment to ensure reliable oscillator starting, depending upon the activity of the crystal used at Y1.
valuable insight into the coil quality. You can tuned for a peak indication, the higher the coil
The higher the M1 meter reading, when C6 is adjusting the control for specific lower
u
the coil to provide various Q
values by

The experiment which was carried out by Dr Schou showed by means of a steady high-
pitch tone of 8 kHz on film shrunk to various degrees, that the sippage which occurs in printing
shrunk sound tracks onto new stocks leads to loss of these high-pitched sounds and can result in
gross distortion.

He demonstrated the effect by playing a section of Wagner's Ride of the Valkyrie both as it should
be and then as distorted by shrinkage:

From National Film and Sound Archive Newsletter, May 1986

WRAP-UP

The crystal frequencies are critical if you wish to have the dial scale track on the various inductance ranges. However, if you do not object to plotting a scale for each range, you may use crystals of various frequencies for your instrument. My early tests, for example, were made with 2.1- and 8.0- MHz crystals, since these were the only ones I had that were close to the desired frequency. But remember, traps will need to be changed.

I am convinced that you will find this test instrument one of the most valuable in the shack. It will be helpful for determining the values of surplus slug-tuned coils and many toroidal and pot-core inductors.

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Written by Doug Demaw W1FB, ARRL Contributing Editor, PO Box 250, Luther, MI 49656, and reprinted from QST April 1986

SHRINKAGE ADVERSELY AFFECTS SOUND TRACKS

Dr Henning Schou, has devised and carried out experiments which demonstrate how film shrinkage adversely affects sound track quality, resulting in the loss of high frequency sounds.

The experiment which was carried out by Dr Schou, in Sydney, confirmed a principle which had been suspected for some time.

Fig 4—The “ugly construction” prototype tester built by W1FB. PC-board material is used for the chassis and panel (see text). The twin oscillators are mounted vertically near the tuning capacitor to keep the critical leads short. The meter amplifier is seen below the meter on a terminal strip.

S-meter. Any 100- or 200-μA meter may be used. You can use a 50-μA instrument, but adjustment of R1 and R2 may be more critical than when using a 200-μA movement.

I used tape labels for identifying the front-panel controls. A fine-point marking pen is ideal for marking the μH calibration on the panel (C6).

RELATIVE Q

The higher the M1 meter reading, when C6 is tuned for a peak indication, the higher the coil Q. This is a crude test at best, but it provides valuable insight into the coil quality. You can calibrate the instrument for more accurate Q readings by mounting R1 on the panel, then marking its range for various Q factors. The ARRL Electronics Data Book (which is out of print — Ed) explains how to measure coil Q, and a test circuit is provided. You may use one high-Q coil for the high-range calibration, then place a variable resistor (100 kΩ control) across the coil to provide various Q values by adjusting the control for specific lower resistances.

It is possible to build a very elaborate instrument by using the circuit in Figure 1 as a foundation. For example, a vernier drive and readout dial for C6 would represent an improvement. A shielded metal cabinet would represent a step forward, too. A larger meter at M1 would aid you in observing the meter action more easily.

CALIBRATION AND USE

Various capacitors may be used at C6, but whatever type you select should have a minimum capacitance of 40 pF or less, and the maximum capacitance needs to be 400 pF or greater. I used a surplus two-gang capacitor with both sections in parallel. The tuning range is from 35 pF to 465 pF; hence the overrun at whatever type you select should have a foundation. For example, a vernier drive and readout dial for C6 would represent an improvement. A shielded metal cabinet would represent a step forward, too. A larger meter at M1 would aid you in observing the meter action more easily.

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**WIRELESS INSTITUTE OF AUSTRALIA**

**DIRECTORY**

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<td>Mr Ron Fisher, VK3OM</td>
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<td>PO Box 300, Caulfield South, Vic. 3162</td>
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<td>Mr Barry Riseley, VK7AD</td>
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<td>Secretary: Mr Jeff Pages, VK2BYY</td>
<td>Mr Peter Gamble, VK3YRP</td>
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<td>Mr Michael Doble, VK3AMD</td>
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<td>Secretary: Mr Don McDonald, VK5ADD</td>
<td>Mr Peter Gamble, VK3YRP</td>
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<td><strong>WESTERN AUSTRALIA</strong></td>
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<td>President: Mr Bruce Hedland-Thomas, VK6OO</td>
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<td>Secretary: Mr Fred Parsonage, VK6PF</td>
<td>Mr Peter Gamble, VK3YRP</td>
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| **POSTAL INFORMATION** |                          |
| VK1 | PO Box 600, GPO, Canberra, ACT. 2601 |
| VK2 | PO Box 1066, Parramatta, NSW. 2150 |
| VK3 | 412 Brunswick Street, Fitzroy, Vic. 3065 |
| VK4 | GPO Box 638, Brisbane, Qld. 4001 |
| VK5 | GPO Box 1234, Adelaide, SA. 5001 |
| VK6 | 37317, Winnellie, NT. 5789 |
| VK7 | PO Box 101, Launceston, Tas. 7250 |
| VK8 | Darwin Amateur Radio Club (Inc), PO Box 3071, Winnellie, NT. 5789 |

| **BROADCAST DIRECTORY** |                          |
| VK1 | 3.570 MHz and 2 metres, Channel 6950 at 2000 hours. |
| VK2 | Broadcasts — 1100 and 1930 hours. (Frequencies bracketed at 1100 only). Frequencies are 1.845, (3.585) GHz, (7.146), 28.320, 52.525, 144.120, 583.500 MHz (Central Coast and Orange ATV sound). Repeaters are 6950 Oberon, (3.595), (7.146), 28.320, 52.525, 144.120, 583.500 MHz (Central Coast and Orange ATV sound). |
| VK3 | 1.845, 3.580, 7.120, 14.342, 21.175, 28.400 MHz and Repeaters on Channel 6700 and 7000 at 0900 hours. Re-broadcast on 147.150 MHz. |
| VK4 | 1.825, 3.580, 7.120, 14.342, 21.175, 28.400 MHz and Repeaters on Channel 6700 and 7000 at 0900 hours. Re-broadcast on 147.150 MHz. |
| VK5 | 3.550, 14.175, 28.470, 53.100 MHz. Repeaters on Ad 147,000, Mid N 146,700, SE 146,900 MHz. ATV on Channel 34, UHF 579,000, Med N 444,250, NT 3.555 and 146,500 MHz at 0900 hours. |
| VK6 | 3.580, 7.080, 14.100, 14.175, 21.185, 28.485 MHz, Channel 2 Perth, Channel 6 Bunbury, 52.080 MHz, 6 metres SSB at 0930 hours. |
| VK7 | 2 metres through linked repeaters network, Channel 2 (south), Channel 8 (north), Channel 3 (north-west), and linked to 7.130 MHz SSB and 3.570 MHz and other frequencies as available, at 0930 hours. All broadcasts are on Sunday unless otherwise stated. All times are local. |

**AMATEUR RADIO, September 1986 - Page 25**
AMATEUR RADIO THEMATIC PHILATELIC

About 10 years ago, Marilyn Syme VK3DMS, began to have an interest in philately, or stamp collecting.

But it was not until five years later that she became hooked on building up a collection of philatelic items related in some way to amateur radio.

Ironically it was AR's cover in May 1980, which showed various stamps associated with amateur radio (the hobby) that sparked off her keen interest. "That cover of AR really got me started," says Marilyn who had since tried to get most of the stamps shown on the 1980 cover. With obvious disappointment in her voice, she says "It's almost impossible to get the stamps from South America."

Maybe a reader of this article has a way of obtaining the amateur radio theme stamps from South America to add to her collection?

Collecting stamps by a theme is a specialisation in philately. Obvious themes include boats and ships, music, Christmas, space, medicine, birds, fish, horses, flight — the possibilities are endless.

Stamps can be collected and arranged so they trace the historical development of something. But according to the Usborne Guide to Stamps and Stamp Collecting, it is not always necessary to put stamps in strict historical order even when telling a story through stamps. The overall look of the page in a thematic collection, grouping stamps together to emphasise parts of your story is acceptable.

Marilyn has about four dozen stamps in the amateur radio collection, and the hunt continues for new additions. She has developed a habit of looking very closely at stamps and stamp catalogues so as not to overlook a small detail which would justify a stamp being included in the collection. However, it is not just stamps which help build up her thematic collection. Post marks, first day covers (like the WIA 75th Anniversary pre-stamped envelope in 1985), and QSL cards which have gone through the mail as post cards.

Marilyn says one of her prized possessions is a QSL card for the "First German Post War Hamfest" — the first conference of radio amateurs in Germany immediately after World War Two. It took place on June 7-8, 1947, in Stuttgart — before the Berlin Wall divided Germany.

She says another philatelic rarity is a Pitcairn Island envelope issued to commemorate the first radio transmission from that tiny Pacific Island in 1938 — the signal was transmitted by a radio amateur. Marilyn says the stamps and other philatelic item contain a lot of very interesting history and background on amateur radio activities and developments.

Part of the pleasure of having a thematic collection is writing captions for each stamp to help tell the story within the overall theme.

STAMPS AN ALLIED PURSUIT FOR RADIO AMATEURS

The average active radio amateur or shortwave listener who chases DX often finds the postage stamps on overseas envelopes that arrive carrying a much-wanted QSL are almost of as much interest as the QSL.

Unfortunately, used or cancelled stamps as philatelists call them, can be of little or no use due to them being damaged, incomplete or spoiled.

But a little care when putting stamps on envelopes will increase the chances of them reaching their destination in good condition.

Putting a stamp in the extreme right-hand corner of an envelope is inviting it to be damaged in the postal system. Leave a few millimetres of blank envelope at the top and right-hand side of the stamp. However, experienced DXers advise against this practice when sending QSLs to some third world countries. Mail has gone missing and the theory is that in countries with a very low standard of living used foreign stamps can be converted into a meal.

The advice when sending direct QSLs to these countries is to use the plainest brown paper envelope, a damaged stamp or have it franked (cash register imprinted). While franking is officially only available when posting a large quantity of envelopes — it shouldn't be difficult to find a friendly postmaster who will assist in having the odd one or two letters franked.

And avoid identifying on the outside of the envelope that its contents are related to amateur radio — this will indicate that it contains International Reply Coupons or green-backs.

If stamp collecting does not interest you in the slightest, you will certainly find a relative, friend or neighbour who has a collection and be eager to take those foreign stamps which arrive with incoming QSLs.

Some of us playing our patriotic part also have a variety of used Australian stamps on hand to accompany direct QSLs sent overseas.
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<td>USA</td>
<td>5 Cents</td>
<td>ARRL 50th Anniversary</td>
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<td>4k</td>
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<td>1975</td>
<td>Costa Rica</td>
<td>1.50z</td>
<td>IARU Region One Conference</td>
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<td>1975</td>
<td>Costa Rica</td>
<td>1.00 Colones</td>
<td>16th Convention, Federation de Radio Clubs de Central America</td>
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<tr>
<td>1975</td>
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<td>Dominican Republic</td>
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<td>1975</td>
<td>Dominican Republic</td>
<td>10 Centeos</td>
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<td>27z</td>
<td>D Maksymilian Kolbe SP3RN</td>
</tr>
<tr>
<td>1982</td>
<td>Chile</td>
<td>7 Pesos</td>
<td>ROC 60th Anniversary</td>
</tr>
<tr>
<td>1983</td>
<td>Sri Lanka</td>
<td>2.50 Rupee</td>
<td>50th Anniversary of Amateur Radio in Sri Lanka</td>
</tr>
<tr>
<td>1983</td>
<td>Jordan</td>
<td>33 Cent</td>
<td>Royal Jordanian Amateur Radio Society</td>
</tr>
<tr>
<td>1985</td>
<td>Australia</td>
<td>33 Cent</td>
<td>WIA 75th Anniversary (pre-stamped envelope)</td>
</tr>
</tbody>
</table>

(List source — Telecommunications Journal, December 1979, V Clark W4KFC (SK), JA3AER, NJ2ATT and VK3DMS)
It is 18 years since permission was first given to establish repeaters. The short period, 1972-75, as we know it today, started in the capital cities. At Albury in July 1972, VK4 and VK2 applied for licenses on 1 for Orange, Gosford and Wollongong, and on 4 at Sydney and Newcastle. These were not granted until 1970.

It was soon found that the close geographical spacing and only two available channels had lead to interference and inability to introduce more services. A new meeting was held at Albury in July 1972. It was proposed to:

- Change the offset to (minus) 600 kHz, shift the outputs to above inputs, with seven channels spaced 50 kHz.
- Introduce simplex channels round 146.500 MHz and phase out the old A-B-C at 146 MHz.
- New number system were proposed by dividing the 144-148 MHz band into 25 kHz channels from 144 000 kHz upwards.

VK2 was not in favour of the change and at a special Sydney meeting on April 1, 1973, voted 216 to 10 to retain the old system. Even a special Federal meeting in September 1973 could not change VK2's outlook. However, as 1974 wore on, the thinking began to change. A new meeting was held on 17 December 1974, and considered the 1973 vote by a similar margin — 200 to 10 in favour of adopting the new plan. This freed the existing repeaters — Orange remained on 6700 and Dural on 7000. Gosford went to 6750, Wollongong to 6850, Newcastle to 6900, and Heathcote was granted 6800. 6950 was reserved for the Blue Mountains. The background for the rejection of the 1972 meeting by VK2 is fading as memories grow old. The reason was the confidence in the intention internationally to introduce the satellite sub-band 145.800 - 146.000 MHz. The Federal Repeater Secretariat from 1968 had been handled by VK2. By 1972, the VK3's had been trying to become the FRS and VK2 resisted. When VK3 proposed the new plan VK2 must have thought it was yet another southern plot and dug their toes in. Federal placed the FRS in VKS for a time. It then reverted to VK3 and the passing of time and chance. Now VK2 can participate in one of the functions of FTAC. 1985-86 saw the production of the Repeater Policy Paper.

Meanwhile back in VK2 applications were submitted to change systems to the new channels. Dural was waiting for permission when a commercial base-station on 72.950 MHz was re-located from near Parramatta to Dural. This was taken to the production of the Repeater Policy Paper.

About 1975, even seven channels proved insufficient, so simplex Channel 53 (146.650) was paired with 146.025 MHz to become Channel 1, and expansion into above 147 and 25 kHz channel spacing began. By now the old VK2 had changed being half the Dural output frequency, the base began to hear the repeater multiplier chain. To overcome the problem and allow people time to obtain crystals, the new output frequency (147.000) was installed at Dural, and the old (145.900) continued at Paddington and linked from Dural.

The harmonic problem was that 438 is three times 146. However, it is a user problem, for if you transmit on Channel 6700, your harmonic will appear on 438.300 MHz. This thinking occurred while there were 50 kHz channels on two metres, but no longer is valid with 25 kHz spacing. It is a planning consideration now to avoid harmonic relationships. For example — if your area has an 8525 on 70 cm, you would not have an 8775 on two metres or the user will have to change the baseband if listening on 8525 without transmitting on 6775. (146.175 x 3 = 438.525).

70 cm Simplex is the segment 439.000 ± 25 MHz and the low and high repeater channels 438.025-438.725 and 439.275-439.975 MHz.

Repeater development the various changes had been submitted to and debated at the Federal Conventions. The outcomes have formed the basis of Australia's Band Plans, which, together with established repeaters, are listed in the annual Call Books.

These plans are often wrongly referred to as WIA Plans. They are co-ordinated by the WIA, but input effectively comes from all interested users by the various forms of representation.

The development of repeaters on other bands followed the two metre systems. Next was the 70 cm band. Unlike two metres, where the amateur is the primary user, 70 cm is a 30 MHz segment where the amateur is a secondary service to Radio Location. In 1975, permission was granted to place unattended operation systems on beacons and repeaters — 50 kHz channel spacing, 433-440 MHz. There were some allocations already in place like the tunable operation at 432 (the third harmonic of 144) and the international ITU noted Amateur Satellite Service between 435 and 438. This really left very little choice only that only 25 or 75 MHz. In VK6 they had a channel on 52.655 MHz.
MHz, and VK2 made a little use of 52.700 and 53.950 MHz. There was perhaps more AM activity with converted Pye Reporters on channels like 53.032, 53.035, 53.100, 53.866 and 53.982 MHz. Most systems developed due to the availability of surplus crystals.

Demand for six metre repeaters in Australia has been limited. There is one licensed in VK6, two in VK3, one in VK2 with current interest for a second in VK2 and one in VK4. The Australian Band Plan was developed when the international offset was 600 kHz. Since then, America has adopted a 1 MHz offset and equipment manufacturers have altered to suit. At the 1986 Federal Convention it was agreed to change our offset to 1 MHz. These changes are currently being incorporated in the Band Plan.

The plan set the channel spacing at 25 kHz with two channels for each of Australia's eight States or Territories on a single use per channel basis. The thinking was to allow clear channel working during times of band openings. There is nothing to prevent a State Repeater Committee re-using the same channel as often as they like within their State, particularly if they pick the null points in the usual local skip distances. Interstate openings may key more than one, but is a small price to pay if it helps to get activity on the band!

Overseas (mainly America) 10 metre repeaters have developed, often with extra inputs/outputs on VHF/UHF channels. The segment is 29.500 to 29.700 MHz, four channels, 20 kHz spacing with 100 kHz offset. Simplex at 29.600 MHz. To date, there has been limited VK3 and VK6 interest. If established they would only be available to full call licensees. From an engineering viewpoint they ideally need split receiving — transmitting sites to overcome the de-sense present with the close input/output spacing. VK6 have progressed to the point where they have prepared and submitted an application for a 10 metre repeater.

Moving toward the other end of the spectrum, the 23 cm band is now starting to attract international repeaters. The equipment being manufactured usually covers 1260-1300 MHz, 25 kHz channel spacing with fully programmable offsets. The world has a variety of offsets, the Japanese have 20 MHz, and some Europeans have 33 MHz. Australian amateurs are the secondary service in this band to Radio Location and has to observe the (ITU) Amateur Satellite Service 1260-1270 MHz. Also, Australia has 6-150 mile (10-240 km) radius aviation radars in the segment to 29.700 MHz. Much debate has occurred for the establishment of band plans. It has not been without drama. Various repeaters have been attacked and/or stolen, others fall victim to anti-social movement. Many have reflected amateur ingenuity in sites, power sources or what functions they perform. Their story will be told in future issues of Amateur Radio.

**ILLAWARRA AMATEUR RADIO SOCIETY**

The Illawarra Amateur Radio Society will celebrate 25 years of operation in the Illawarra area during March 1987.

At a committee meeting held on June 17, 1986 it was decided to try to arrange a special occasion for this important anniversary.

To make a gala occasion, the society would like to hear from members, past members, past members families or anyone who has knowledge of (no matter how small) the amateur radio clubs existence in the Wollongong area during the period 1962-70.

Any information, memories, documents and even photographs which would be used to compile an up-to-date documentary for the occasion would be sincerely appreciated.

All items submitted will be handled with utmost care and will be returned to their owners in their original condition.

Accordingly, it will be given to the persons concerned if they so desire.

Any readers who may be able to help with this matter are requested to contact Dave VK2PZY on 84 9872 or Morry VK2EMV 83 1219, or write to them care of the club at PO Box 1838 Wollongong, NSW 2500.
As indicated in earlier issues of *Amateur Radio*, the Federal Technical Advisory Committee (FTAC) had prepared discussion papers titled "Review of Amateur Radio Service Terrestrial Repeaters" and "Review of Amateur Radio Service Packet Communications." Summaries of these papers were printed in the February and March 1986 issues of *Amateur Radio*.

A paper titled "Band Plans for the Amateur Service" was also prepared and was presented in a three part article in the January, February and April 1986 issues of *Amateur Radio*.

Following comments from a number of amateurs, amendments were made to the papers, which were then printed and circulated for discussion at the 1986 Federal Convention. A brief presentation was made on the highlights of each of the papers by the Chairman of FTAC. Following extensive discussions, both in the formal Convention sessions and during "meal" and other breaks, the papers were adopted with some modifications.

The following article presents the recommendations from the "Repeaters" and "Packet" papers. The results of the discussion on the "Band Plans" paper will appear next month.

One of the topics in the Repeater paper which caused the most interest was the subject of the cross linking of repeaters. Accordingly, that section of the paper is presented in full.

4. CROSS LINKING OF AMATEUR REPEATERS

4.1 Introduction

As indicated in the opening section of this paper, repeaters are an enhancement of the amateur service. There are many ways that this enhancement can be achieved, such as by using new technologies and new modes, and by expanding considerably the service area of an existing repeater. A typical example of the last point is the expansion of the amateur satellite service where VHF/UHF contacts to countries halfway round the world are now possible.

Figure 1 illustrates the general components of the linking process. Note that a key part of the linking process is the establishment of separate transmit and receive equipment to pass the linked signals from one repeater to another. Where repeaters share an overlapping service area and the same transmitting and receiving frequencies, but do not exchange the relayed signals on a separate frequency, they are not considered to be linked. An example of this type of operation are some of the packet repeaters now being established.

4.2 The Present Situation

One technique for expanding the service area of a repeater is to link it to another repeater. This could be done for a variety of reasons, for example to carry a news broadcast to more listeners, or to provide coverage from an isolated country area back to a neighbouring town or city, or to link a major population centre with its nearby recreational area.

Approval has been given by the Department of Communications for three particular instances of cross linking on a trial basis. These are:
- Tasmania — a link to relay WIA Broadcasts,
- South Australia — to link city and country Amateur Television activities,
- Western Australia — to link city and country voice repeaters where the country repeaters serve an isolated stretch of highway north of Perth.

It is anticipated that further requests for repeater linking will be forwarded to the Department. These are expected to be primarily for extending the service area of a repeater, whether it be voice or specialist modes such as Amateur Television or Packet Radio.

4.3 General Guidelines for Repeater Cross Linking

The Wireless Institute believes that cross linking of repeaters should be supported provided that certain conditions are met. The reason for the cross linking should be consistent with the aim of enhancing the amateur service.

The following points are offered as guidelines for the licensing of linked repeaters irrespective of mode:

a. Each repeater in the linked group is to be licensed individually according to the normal repeater licensing requirements. The cross linking is to be the subject of a separate application. Further, approval in principle may be sought for any or all of the applications.

b. Cross linking of repeaters will not be permitted where such an arrangement allows an amateur to originate a signal on a band or in a mode that he or she is not normally permitted to use.

c. Cross linking may be either permanent; ie all transmissions are cross linked, or temporary for specific purposes; eg only WIA news broadcasts or WICEN activities are cross linked. Where cross linking is for a temporary specific purpose, then it may be appropriate to modify some of the following conditions as indicated.

d. The traffic and interconnecting signals for permanent cross linking should not normally be carried in the same amateur band. While it is preferred that this band be a higher frequency band, it is noted that propagation characteristics of a particular location may require the linking to be done on a lower VH/UHF band. Further, the cross linking frequencies should be in accordance with an approved Wireless Institute Band Plan.

e. Cross linking of repeaters for a temporary specific purpose; eg a Wireless Institute Broadcast or for WICEN activities, will be permitted to use "off-air" signals for input.

f. The maximum number of repeaters to be cross linked where simultaneous emission is used will usually be a maximum of three.

Where the received transmission is stored before re-transmission; eg in RTTY or Packet mode operations, or where repeaters may be selectively added to the link, then this limit does not apply. This restriction does not apply to the cross linking of repeaters for a temporary specific purpose; eg a Wireless Institute Broadcast or for WICEN activities.

g. All ATV repeaters and links should not use double-sideband emissions only for picture signals.

It is noted that further mode specific conditions may need to be applied from time to time to overcome difficulties that are being encountered or are foreseen.

RECOMMENDATIONS

The Wireless Institute believes that the present approach by the Department of Communications to amateur linking of repeaters should be generally satisfactory. This is shown by the ever increasing number of these devices that are being placed into service by the amateur fraternity.

However, there are a number of points arising out of the new regulations which require further discussion and consideration. Accordingly, the Wireless Institute makes the following recommendations:

1. That the justification or need for a repeater is a matter for the amateur service to determine.

2. That the Wireless Institute develop and publish guidelines for the use of various modes of repeaters as required.

3. That the Wireless Institute develop a procedure to co-ordinate repeater licence applications.

4. That the Wireless Institute develop a set of maximum time-out periods for various modes and locations of repeaters, policies for the use of specialised access control techniques, and other technical standards as necessary.

5. That the Wireless Institute discuss further with the Department of Communications the ef-
Effects of ensuring amateur repeaters met specified constructional and operational standards with a view to minimising the effect on amateur repeaters when interference is being caused by other spectrum users.

6. That repeaters continue to be permitted in the six metre band and that the matter of repeaters in the 10 metre band be discussed with the Department of Communications with a view to such devices being permitted in accordance with international band planning principles. Further, that 10 metre repeaters be permitted to use 5 kHz deviation transmissions.

7. That the guidelines proposed in Section 4 of this paper for the cross linking of repeaters in the amateur service be approved.

If the above recommendations are accepted by the Department of Communications, then the enhancements they permit to the amateur service repeaters will allow amateurs to continue to experiment with new technology, and to provide valuable community service in times of need.

In addition to the presentation of the Packet Radio Paper, which include some explanations on Packet techniques, the Melbourne Radio Packet Group put on a demonstration. This enabled the delegates and visitors to see first hand the operation of a Packet Radio Station.

The following is the final section of the paper which contains the recommendations:

7. RECOMMENDATIONS

After consideration of the various issues raised by the development of Packet Radio Communications, the Federal Technical Advisory Committee presents the following recommendations for adoption by the Wireless Institute of Australia.

1. All Packet Radio Protocols which ensure that call signs or call sign information is contained in each packet should be permitted, and that no requirements be placed on equipment design except those generally necessary under the existing amateur radio service regulations.

2. Any amateur radio operator may set up a packet radio station if permitted to do so under the terms of their existing licence. Further, such an amateur station may operate in the unattended mode for the purpose of receiving information from another packet mode station providing that suitable fail-safe firmware is incorporated to ensure that the transmitter cannot remain keyed on for an excessive period of time. While this station is operated in the attended mode, it may be used to receive and retransmit incoming packets destined for other amateurs, and also provide computer or network resources.

3. Any group of amateurs may apply for a licence to establish and operate a continuously operating range extending or repeater device for packet radio. Such an application should be in the form of a conventional repeater application. No restriction should be placed on access to this facility by appropriately licenced amateur operators.

4. Any amateur or group of amateurs may apply for a licence to establish and operate a continuously operating range extending or repeater device for packet radio. Such an application should be in the form of a conventional repeater licence. It should not be mandatory for restrictions to be placed on access to this facility by appropriately licenced amateur operators, this being up to the discretion of the licenced operator. All calls to this facility are to be logged by the system, the information to be recorded to include call sign information and time and date. Further, if such a system is connected to a telecommunications network, then material originated from such a network cannot be made available for transmission over the amateur radio link. Further, a system licenced under this section is permitted to automatically originate a call over the amateur radio service and deliver a previously lodged message.

5. That the above recommendations 1. to 4. be represented to the Department of Communications as guidelines for the operation of amateur service packet radio stations.

6. That protocols which comply with these guidelines and make efficient use of the radio spectrum be promoted.

7. That Terminal Node Controller designs which allow the use of more than one protocol be promoted.

8. That range extending repeater devices and computer systems that comply with recommendations c. and d. above be promoted.

If the above recommendations are accepted, both by the WIA and the DOC, then amateur radio operators will be able to continue exploring new frontiers of technology in the traditions established over the last 75 years.

Following the adoption of the above recommendations on Repeaters and Packet Radio at the 1986 Federal Convention, the Federal Executive was requested to make the necessary representations to the Department of Communications. That process has already started and further reports will be presented on the results of the discussions with DOC.

I would like to thank all of the amateurs who contributed to these papers, both during their initial drafting and as a response to the printing of the earlier versions in *Amateur Radio*. As a result of the wide ranging discussions that had been held right around Australia on these topics, the Federal Councillors were well briefed on the issues when they arrived in Melbourne for the Convention.

References:

The Japanese Amateur Satellite Project, JAS-1, has been promoted since 1983. JAS-1 was due to be launched on August 1, 1986. Following is a general run-down of the launch to the launch.

characters every minute. It repeats in this format. There are 30 items of data and 33 items of status in the telemetry of JAS-1, however, the beacon carries 12 data items and all status.

The telemetry reads as follows:

In analog data 1A through 3D, A, B, C and D express two digits of decimal value. This is a raw data and the value should be divided by 50. Let this quotient be N, for each item. True value of each B is obtained by the conversion shown in Table 2.

Table 2 — Conversion of Analog Telemetry

<table>
<thead>
<tr>
<th>Item</th>
<th>Expressed</th>
<th>Decimal Binary</th>
<th>Decimal Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current of Solar Cells, 0-2</td>
<td>N Amp.</td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>Charge/Discharge Current of Battery, 0 to 2</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>Terminal Voltage of Battery, 0-20</td>
<td>V</td>
<td>N x 11 Volt.</td>
</tr>
<tr>
<td>1D</td>
<td>Centre-tap Voltage of Battery, 0-20</td>
<td>V</td>
<td>N x 4.32 Volt.</td>
</tr>
<tr>
<td>2A</td>
<td>Bus Voltage, 0-20 V</td>
<td>V</td>
<td>N x 10.08 Volt.</td>
</tr>
<tr>
<td>2B</td>
<td>Regulated Voltage + 5 V, 0 to 20</td>
<td>V</td>
<td>N x 3.04 Volt.</td>
</tr>
<tr>
<td>2C</td>
<td>Output Power of JTA, 0-3</td>
<td>P</td>
<td>N x 10.11 Watt</td>
</tr>
<tr>
<td>2D</td>
<td>Calibration Voltage, 0-2 V</td>
<td>V</td>
<td>N x 1 Watt</td>
</tr>
<tr>
<td>3A</td>
<td>Temperature of Battery Cell, 0 to 50</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>3B</td>
<td>Temperature of Bus Structure 1</td>
<td>°C</td>
<td>Temperature is reduced Structure 2</td>
</tr>
<tr>
<td>3C</td>
<td>Temperature of Bus Structure 2</td>
<td>°C</td>
<td>Temperature is reduced Structure 3</td>
</tr>
<tr>
<td>3D</td>
<td>Temperature of Bus</td>
<td>°C</td>
<td>T = (1.3 - N) x 73</td>
</tr>
</tbody>
</table>

This table of telemetry does not show any nominal value, but these values will tend to converge to some definite values or range through the operation of the satellite for several months.

Table 3.

<table>
<thead>
<tr>
<th>Decimal Binary</th>
<th>Decimal Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>000</td>
</tr>
<tr>
<td>1</td>
<td>001</td>
</tr>
<tr>
<td>2</td>
<td>010</td>
</tr>
<tr>
<td>3</td>
<td>011</td>
</tr>
</tbody>
</table>

Status is expressed from 4A through 5D. Each character represents two digits of decimal numbers, 0 to 3 for the left digit and 4 to 7 for the right digit. These two digits can be written in binary code as shown in Table 3. You can find five independent binary pairs out of this Table. For example, if the first item of status 4A were 423, 4 should be removed, and the binary code (010) for 2 and (011) for 3 are put in order, 010111. The left bit of two binary sets, 0 is common or redundant, the right bit of 0 is removed — thus it becomes 10011. This expresses the inverted order of status, No 5 to No 1 to le 1: No 5 beacon PSK, 0, (blank), 0, (blank), T/JTD ON, 0; T/JTA ON. Expression of status goes like this to status No 33, every five status, and this is shown in Table 4. This expression is possible because all of the status have only two situations, ON/OFF or 1/2 and so on.

About one hour after launch, the second stage rocket will be over the South American Continent and the two payloads will separate from the rocket sequentially.

JAS-1 will be activated at the moment of separation when the power supply turns on, and the telemetry described in this article, after its separation, is obtained by the conversion shown in Table 2.

The launch window will be limited within two hours, 2000 to 2200 UTC of the pertinent day. JAS-1 will begin to transmit its beacon signal with the telemetry described in this article, after its separation, to the beacon vehicle above the South American Continent.

Initially, JAS-1 will be operated only in analog mode. For digital operation, the pre-launch working is required and it will become available one to two months after launch.

SPECIFICATIONS
Scheduled launch, August 1, by H-I vehicle from the Tanegashima Space Centre of NASDA, Japan. The orbit will be circular at an altitude of 1500 km. Period — 116 min. Inclination 50 degrees. Projected three years life.

JAS-1 is a Polyhedron of 26 faces covered in golden aluminised solar cells, weighs 50 kg and is 400 mm (diameter) x 470 mm (height). Power generation — eight watts at the beginning of life.

Communication Sub-system: Analog (JA) and digital (JD) communication in mode J.

Transponders:
Analog transponder (Linear transponder) Input frequency — 145.900-146.000 MHz (bandwidth 100 kHz)
Output frequency — 435.900-435.800 MHz (inverted sideband)
Required uplink EIRP — 100 watts
EIRP of transponder — two watts PEP
Digital transponder Input frequency — four channels of 145.850, 145.870, 145.890, 145.910 MHz
Output frequency — 435.910-435.910 MHz (one channel)
Required uplink EIRP — 100 watts
EIRP of transponder — one watt RMS
Signal format — 1200 Baud PSK, store and forward

Beacon and Telemetry
JA Beacon — 435.795 MHz, 100 mw CW or PSK
JD Beacon — 435.910 MHz, one watt PSK

Orbit Parameters:
Epoch — 1986-07-31, 21h, 32m, 07.20s UTC
Semi-major axis — 7697.562 km
Eccentricity — 0.000140656
Inclination — 50.0039 degrees
Mean anomaly — 330.246 degrees

EXTRACTING TOOL FOR LCCs
The EX-4 is a hand-tool for safely and reliably extracting leadless chip carriers (LCCs) from board mounted sockets. It helps prevent unnecessary overstress to chip carrier pins by maintaining even pressure on contacts during removal.

When the operator is properly grounded, the easy to use tool safely dissipates static charge to prevent damage to components.

Models are available for 20; 28; 44; 52; 68; 84 and 124 contact chip carriers.

Abridged from Electronic News, p34 — April 1986
This is a guide to call signs, and special prefixes and suffixes issued by the Department of Communications to stations in the Amateur Radio Service.

The unrestricted licence call sign prefix is VK followed by a single number indicating the state or territory in which the station is licensed:
- 0 — Australian Antarctic Territory;
- 1 — Australian Capital Territory;
- 2 — New South Wales;
- 3 — Victoria;
- 4 — Queensland;
- 5 — South Australia;
- 6 — Western Australia;
- 7 — Tasmania;
- 8 — Northern Territory;
- 9 — External Territories (VK9L — Lord Howe Island; VK9M — Miliell Reel; VK9N — Norfolk Island; VK0X — Christmas Island; VK9Y — Cocos (Keeling) Islands; VK9Z — Willis Island).

### SUFFIX

The suffix indicates the licence grade.

- **Amateur Unrestricted** — AA-ZZ; AAA-FZZ.
- **Amateur Limited** — TAA-TZS; TAA-TZZ; XAA-ZXX; YAA-ZYY; ZAA-ZZZ.
- **Amateur Novice** — MAA-NZZ; AAA-PZZ; VAA-VZZ.
- **Amateur Combined** (Novice and Limited) — JAA-KZZ.

Exceptions were VK5JSA and VI5JSA for Jubilee Anniversary in recognition of this milestone in amateur radio. It was the first and only amateur radio station set up in the HMAS Castlemaine a preserved World War Two Corvette located at Gem Pier, Williamstown, and VK1RAN is the Royal Naval Amateur Radio Society, whilst VK4RAN is operational on board the HMAS Diamantina under the auspices of the Queensland Maritime Museum.

Some departures from the normal call sign suffixes include GGA Girl Guides Association, and SAA-SZZ Scout Association.

- **Amateur Repeaters and Beacons** — RAA-RZZ
- **Special Prefixes** — SAA-SZZ
- **Amateur Limited** — TAA-TZS
- **Amateur Novice** — MAA-NZZ
- **Amateur Combined** (Novice and Limited) — JAA-KZZ

Other miscellaneous club-type stations are VK3SES, Victorian State Emergency Service; VK3JA, and VK3SJB St. John Ambulance Brigade; and telegraphy groups in various states have the suffix TTY.

### ALTERNATIVE PREFIXES

The alternative optional prefix AX was first used in commemoration of the Cook Bicentenary (1970). The next occasion was for the Royal Australian Corps of Signals Jubilee when commemorative station AX3SIG was on air from the Signals Depot, Watsonia Barracks, Macleod, Victoria, November 3-10, 1975.

Four years later, AX was used to mark the 150th Anniversary of Western Australia in 1979. The AX prefix celebrated the Royal Wedding on July 29, 1981, the Commonwealth Games in Brisbane saw AX available from August 15-October 15, 1982, and AX helped celebrate the America's Cup win by Australia on September 27, 1983.

A special call sign, AX0PB, was issued for Project Blizzard (1983-84 and 1985-86) in recognition of the project's national significance when it undertook restoration work on Mawson's Hut and scientific investigations in the Antarctic.

Another alternative prefix VI was first used for the 150th Anniversary of European settlement in Victoria (1984-85), then for the WIA's 75th Anniversary (1985), followed by commemorative call sign VI5JSA marking Jubilee 150 — South Australia's Sesquicentenary (1986).

The next likely occasion a special prefix will be available is for Australia's Bicentenary in 1988.

A unique call sign, VK75A, was issued by DOC in 1985 for use by the WIA during its 75th Anniversary in recognition of this milestone in amateur radio. It was the first and only amateur radio call sign in Australia with a double-digit prefix and also had the distinction of having a single letter suffix.

During the WIA 75 celebrations VK75A was activated by WIA members throughout Australia on a roster basis.

Overseas visitors in Melbourne for the WIA 75 Dinner, November 1985, were issued calls from the virgin block of VK3FAA-FZZ.

### DISTINCTIVE SUFFIXES

From time to time, special call sign suffixes are issued.

- **VK2OTC** is the Overseas Telecommunications Commission Amateur Radio Station. The suffix OTU is for use by the WIA which is a member of the International Telecommunications Union through the International Amateur Radio Union, the Commonwealth Games station in Brisbane AX4OGG had an activation period of September 30-October 9, 1982, VK3UAM was a demonstration station call sign for University of the third age, Monash. The World Communication Year (1983) saw the suffix WCY used, JYP was a suffix during the International Year of Peace (1986), and VK1WVH is the Woden Valley Hospital Radio Club.

### WHY HAVE SPECIAL PREFIXES OR SUFFIXES?

Various events and anniversaries throughout the world are celebrated each year — sometimes they have only local interest, but can also be of national or international significance.

Postal authorities bring out stamps, pre-stamped envelopes, first-day covers, and postmarks to help celebrate a special occasion.

Commemorative car number-plates, T-shirts, coins, medals, badges, and regalia also provide a means of having, something personal and tangible to celebrate an occasion.

The hobby of amateur radio helps spread international friendship and understanding, and it is a national thing for radio amateurs to commemorate a significant event through their hobby. After all, our hobby is part of the general community and by using special prefixes or suffixes at the appropriate time it can play its part in a celebration.

An Australian event can be publicised overseas on air and via follow-up commemorative QSL cards or awards. This has also given participating radio amateurs the opportunity of radio, television and newspaper publicity about amateur radio's community role in helping celebrate an event.

### NOT ALL VK STATIONS ARE AMATEUR

The letters VK are used in call signs for other than amateur radio stations. Experimental Stations can be given VK calls, with the same numerical indicator system, but a single letter suffix.

Small boats also have VK call signs but the prefix is followed by a series of numbers.

State police have a three letter call sign — VK1 Melbourne, VKA Adelaide, VKG Sydney, VKI Perth, and VKR Brisbane. The Melbourne Metropolitan Fire Brigade signs VK8N and there are other examples of VK call signs.

For additional information on Australian Amateur Station Call Signs and their history see an article "Notes on Call Signs and QSLs" in the WIA Book Volume 1, pages 52-55.
DIRECT CONVERSION RECEIVERS — Here to stay

The direct conversion (DC) receiver has been enjoying renewed popularity for some time now. This is due partly to the surprisingly good performance obtainable from relatively simple circuitry. To my knowledge, at least one manufacturer of amateur equipment, Ten Tec, has produced a transceiver with a DC receiver section. As far as can be determined, the signal performance can equal, and in some instances exceed that of the more complex superhet. There is only one real disadvantage with DC; the audio image is very difficult to eliminate.

If an incoming frequency of say, 3.550 MHz is introduced to the product detector at input A, and a local oscillator LO (or beat frequency oscillator BFO) running at 3.549 MHz is introduced at input B; the sum and difference will appear at the output of the detector. The sum, 7.099 MHz is unwanted, and easily removed by filtering. The wanted product; 3.550 − 3.549 = 1 kHz is preserved, and is now available for further processing. This is where the term direct conversion comes from — the signal immediately after the product detector is directly converted to audio frequency.

An input band pass filter (BPF) is essential, as only the band of interest should be presented to the receiver. For example, without the filter, strong broadcast signals would enter the detector and probably cause severe overload problems.

The RF amplifier is not a mandatory requirement, in fact some experimenters maintain that RF amplification is not necessary. Nevertheless, its inclusion will significantly improve the signal-to-noise ratio, and increase the overall sensitivity of the receiver. A gain which overcomes any loss in the product detector would be a minimum requirement. About 10 dB would be appropriate — any more and instability problems could occur unless very careful physical circuit layout is observed. There would also be a tendency for local oscillator energy to enter the input of the RF amplifier and cause some queer effects due to overloading, such as hum, squeaks and so on.

The audio band pass filter has a direct parallel with the tuned IF of a superhet receiver. This is where the necessary channel selectivity is obtained. The bandwidth will depend upon the reception mode required. For SSB, DSB and AM; a bandpass of perhaps 300 Hz to 3 kHz would be appropriate, whereas for CW, a bandpass of less than 500 Hz centred on about 1 kHz would be fine. In practice, to keep the receiver moderately simple, a bandpass of about 350 Hz to 2.5 kHz is employed for all modes.

Figure 2 is an attempt to show what happens as the local oscillator frequency is tuned across a portion of the 80 metre band. The cardboard cutout represents the bandpass of the audio filter, strong broadcast signals would enter the input of the RF amplifier and cause some queer effects due to overloading, such as hum, squeaks and so on.

The centre line represents the frequency of the local oscillator (OLO). It will be seen that it is possible to have more than one signal falling inside the bandpass simultaneously. For CW reception, this is not a big problem, as the oscillator may be adjusted to the same — or nearly the same frequency as that of the unwanted signal, leaving the wanted signal as the only audible one. The unwanted signal will now be at zero beat, or far below the low frequency cut-off point of the audio BPF, leaving the wanted signal clearly audible inside the bandpass. For SSB, an unwanted signal, on a different frequency but inside the bandpass would be audible — but unintelligible. Here the brain of the user must do the filtering. It can be shown that unintelligible interference is significantly less irritating than intelligible interference (even a stylish superhet would not eliminate an interfering signal on the same channel).

A characteristic which partly compensates for this short-coming is the 'cleanliness' of the receiver response. This is very hard for me to describe. Suffice to say that signals have a purity about them, due perhaps to the simplicity of the circuitry, and the absence of multiple tuned circuits and attendant noise impulse stretching characteristics.

The bulk of the receiver gain must be provided by the audio amplifier. Some idea of the amount required can be shown as follows. Let's assume an input signal of 1 µV across the input impedance of 50 ohms, and a comfortable speaker power of say 100 mW:

The required 127 dB of gain could be made up of 10 dB of RF gain, perhaps 7 dB gain in an active mixer, leaving 110 dB to be provided by the audio amplifier.

Signals presented to the audio section have been derived by a minimum of processing (one RF amplifier, one mixer), so there is less likelihood that they will have become contaminated by the effects of non-linearities. Low noise op-amps of the 308, 301 and 741 families are now relatively cheap and obtainable, so an audio BPF and high gain amplifier can be built very economically using very ordinary components.

By following appropriate design rules, it is possible for the amateur to make a receiver of very satisfactory performance with a minimum of test equipment. An avenue for construction and experimentation is thus provided which offers both beginner and 'old hand' the opportunity to contribute to the art, even with limited means.

CONCLUSION

By following appropriate design rules, it is possible for the amateur to make a receiver of very satisfactory performance with a minimum of test equipment. An avenue for construction and experimentation is thus provided which offers both beginner and 'old hand' the opportunity to contribute to the art, even with limited means.
A Fiction Story, I Think...

Although I have been a radio amateur for 40 years, I'll never lose my love for shortwave listening. Tuning the 8-9 MHz band, for instance, is as much a thrill for me now as it was in my early years as a kid radio officer aboard a merchant tanker far at sea.

I suppose that is my explanation for so often carrying my little battery-powered shortwave receiver with me almost everywhere I go, that I can turn it on at any time to enjoy what the ether offers from so many exotic locations. Each time, it strikes me as a miracle anew, this ability to receive a distant signal propagated like it were a feat of magic beyond explanation. How many of us look at our hobby that way any more?

Well, to get on with it, one night I had fallen asleep with the earphones on, the receiver still playing a broadcast from 8.333 MHz into my ears. A strange signal, I had thought at the time, but I was tired and soon drifted off.

Hardly had I fallen asleep that I became aware of my dream, a dream in which I was walking along the cobble-stoned street of a city I quickly recognised as being Philadelphia — Market Street, in fact. I was well familiar with the spot.

But this was not 1986! No, not if the dress of those about me was an indication. They stared at my strange garb, just as I stared at theirs. Alongside me was a print shop in which a newspaper was pasted to the window. Quickly I searched for a date. June 26, 1792!

It was then I recognised myself being in a dream. This sort of dreaming is known as "lucid dreaming" in which the dreamer is not only aware of the dream but can also direct its ways. Fortunately, I have experience in lucid dreaming. I knew what to do.

Eagerly searching about me, hoping to make contact with someone, I found nothing. Nothing at all, no clue, no hint at what it was that had jarred my sensibilities that day, the something or other that was obviously so beyond my past life conditioning, beyond my range of acceptance. But, what?

I turn to all of you for help. What do you think it might have been? Was that radio transmission received on HF so many years before earth-men had even discovered radio?

Written by Vince Luciani K2VJ, for CAR! News and contributed by Kevin Moore VK3ASM.

Ian J. Truscott's ELECTRONIC WORLD

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AMATEUR RADIO, September 1986 • Page 35
Two years. It has an output power of two watts to a 70 cm band to the amateur community around it. Ted VK4JTW, has written confirming the operation of his beacon which operates from my parents home in Rockhampton on 144.200 at 2015 UTC, every day, between Harry VK4LE and Joe VK4AEW, with what you may have worked. Of interest too is that most of the more exotic contacts took place in 1978/79/80, with the peak year 1979. Based on the 11 year solar cycle, one could expect to start hearing long distance stations again around 1989 with a few even earlier. The equinoctial periods March/April and September/October seem to have provided the most contacts, a fact which was born out here too. There were 19 contacts on CW, the rest were on SSB. There were a few weak signal reports but most were shown as 5 x 9. All six continents are included.

The list of countries in the July 1986 issue, which had been worked by Graham VK8GB, includes a few not so far worked by Kuni JA2TTO, those being Lord Howe Island, Norfolk Island, Cocos Island, Venezuela, St. Helena, Kenya, Nepal and Trinidad. It is interesting to reflect that there are still variations between two good locations and those extra worked by Graham are not necessarily at his back door.

Other information tendered by Kuni mentions a new station from China on six metres, BY4RB, at Zhenzhang, near BY4AA and operational from June 22, 1986, using a TR9300 and seven element Yagi after receiving instructions on VHF operation from JA1UT. As a result, BY4RB contacted about 1000 JAs on six metres between 22/6 and 26/6 on Es. BY1PK and BY4AA were both worked on 21/6 and 22/6.

From Korea the following are active on six metres: HL1TIE, EJ, JD, PM, TS, AQK, AJV, ACK, ASL, HK1SC, DCO, GS, HL4HAB, CCM, HL5BNV, BIT, HLOS, and reports have been received from as far away as Bill VK1C, with Harry VK4LE, hearing it almost every morning, also most of the time being heard in Mackay. The power will be increased as soon as the new repeater is installed later this year.

**LETTER FROM JAPAN**

Kuni JA2TTO, has written from Shizukoaka City, Japan, where he is Editor of the Six Metre Column in the Mobile Ham monthly magazine and has been since 1977. He has been a member of various DXpeditions, including the JOSUBU group to the Phillipines, YBOX (being the first six metre stations from Indonesia), YB9X Indonesia Bari and HS1WR/YL in Thailand.

Firstly, Kuni says the JA6YBR beacon I have been listing in not an authorised beacon as only JARL can set up beacons in Japan. However, they are trying to obtain permission to construct and operate beacons on 50, 144 and 432 MHz. Therefore, I have duly removed the station from the beacon list for the time being.

Also encosed was a very neatly set out DXCC listing for countries worked on six metres and this will be included in the next listing which comes out in February 1987. As the list arrived too late for the August 1986 listing I am sure it will be of interest to readers to know that 48 countries are listed, made up as follows:

- 1.7JRL Okino-Tori-Shima 30/5/76 1057 UTC
- 2.7JAT Australia 7/4/77 0815 UTC
- 3.JE1AHSU1 Ogasawara 1/5/77 1010 UTC
- 4.JD1YA Minami-Tori-Shima 15/7/77 0907 UTC
- 5.HL9Korea 11/5/77 0910 UTC
- 6.KL2HAMI Alausa 15/7/77 0255 UTC
- 7.KG6DX Guam 22/6/77 0200 UTC
- 8.PS8H Papua New Guinea 3/12/77 1628 UTC
- 9.3D2CM Fiji 23/3/77 0647 UTC
- 10.JY7KM New Hebrides 14/7/78 0235 UTC
- 11.3D2CM Fiji 23/3/77 0647 UTC
- 12.3D2CM Fiji 23/3/77 0647 UTC
- 13.4451X Indonesia 23/4/78 0639 UTC
- 14.4511X Indonesia 23/4/78 0639 UTC
- 15.4511X Indonesia 23/4/78 0639 UTC
- 16.4511X Indonesia 23/4/78 0639 UTC
- 17.4511X Indonesia 23/4/78 0639 UTC
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- 42.4511X Indonesia 23/4/78 0639 UTC
- 43.4511X Indonesia 23/4/78 0639 UTC
- 44.4511X Indonesia 23/4/78 0639 UTC
- 45.4511X Indonesia 23/4/78 0639 UTC
- 46.4511X Indonesia 23/4/78 0639 UTC
- 47.4511X Indonesia 23/4/78 0639 UTC
- 48.4511X Indonesia 23/4/78 0639 UTC

* A letter from Ian Gianville VK3AOU, reads in part — "More than two years ago I built a 432 MHz beacon which operates on various ham radio frequencies in a Melbourne suburb. This is a completely 100 percent privately owned and maintained beacon. It has now been in service continuously for at least two years. It has an output power of two watts to a 70 cm band. This beacon is hoped in the future to increase power to seven watts and perhaps relocate it to the hills around Melbourne.

The beacon operates to the 70 cm signal in the 70 cm band to the amateur community around it and provide a valuable signal for calibration and tune-ups.

I have tentatively shown this beacon as a keyer because it may not be correct so I rely on Ian to advise me further as to its actual status. I believe there are other similar beacons around which are not listed. Provided these beacons are properly set up then I see no reason why they cannot be listed even if they are privately owned."

**NORTH QUEENSLAND**

Ted VK4JTW, from Rockhampton, reports regular schedules are maintained to the west from Rockhampton on 21/6 and 2015 UTC, every day, between Harry VK4LE and Joe VK4AEW, with...
with a relatively clear path and only 50 km apart.

50 km for S9+ signals on six metres so another look at their antenna systems might be in order if obtaining obtained from "two stations both well sited

Noise, even though the distance is only about 50 km. The general conclusion is that six metres is not noisy, I do question why better results are not be-

available for 50 MHz now that the band has been made available to the G-stations. Of particular interest centred around the equipment

for May 1986, courtesy

L22, L21 and L20 for maximum S-meter reading.

1. Break apart Q13 exposing leads that go to the PC-board.
2. 3. Cut the long lead of R86 leaving enough lead so
4. Connect an 82 ohm half-watt resistor in series with R86.
5. The FCM sent a circular to a number of

and posted out suggestions for possible

are usually around 5x5 watts, signals being rock

the six metre band so far had proved it is much
certainly it did not recognise that there are

can't we have a contest in which there is a more

carried on satisfactorily

as, with a 50 km limit, you had one station at 60

applied across the whole spectrum of bands, but

3. The bonus system failed because it was more

and they still have to get their acts together for

have made a number of interstate telephone calls

Consideration about the equipment

already. As you know, it has come under

various quarters in an effort to keep the Ross Hull

of the optimum point when power line hash is at its

no one talks disparagingly about

are reflected in the U43D table of

1. 2. 3.

This was not reflected in

the optimum point when power line hash is at its

worse did make an improvement in the ability of

of the rig to lower the noise level in most cases, (this

the superior blanker in that
case would suffice. It was pointed

stations 2000 km and further with whom it would

better results on two much easier to achieve.

bands. No one talks disparagingly about

most of the early operators are not

forster to exchange scores. I have

these stations would

one expects that is it a new band to these people

the 22 kV line outside

and posted out suggestions for possible

and discussed in various sections of

events, I will try the above modification and

natural, I would hope never to ask my antenna system to withstand 156 mph winds!

The Short Wave Magazine

with antennas on six metres, but

distance is only about 50 km. The general conclusion is that six metres is

from 2030 with 3.620 MHz as back-up. Signals to

then they and the operator working them

some recognition was needed for working

in an effort to keep the Ross Hull Contest alive. As you know, it has come under

waiting for the FCM to mail the new contest rules for

limited to 52, 144 and 432 MHz with bands above being able to operate

In other words, years ago almost no one had equipment for 1296 and above, so it was, by nature, limited to those three bands anyway.

the one point per contact irrespective of
distance, they need something that would occur this year! Incidentally, before the

KLM Electronics.

1986 and further south at Lunon airport

the worst did make an improvement in the ability of

lower power IC551) you may be

I was able to: eventually the noise blanker was unable to cope

linearity, and the operator working them

L22, L21 and L20 for maximum S-meter reading.

The Short Wave Magazine

Several weeks ago I put in a request to the FCM for a Contest for the trophy was limited to 52, 144 and 432 MHz with bands above being able to operate

tend to keep people on the air.

so he did not get full credit for all the contacts he

1. Break apart Q13 exposing leads that go to the

The rig to lower the noise level in most cases, (this

it might not be worth your while to send logs on a regular basis as stations do not

3.620 MHz as back-up. Signals to

somehow occur this year! Incidentally, before the

It was pointed out that

WITHIC Table for operation between January 1, 1985 and December 31, 1985 showed GOCUZ as having worked 16 countries on

to the leads where they are.

this summer, I will try the above modification and

on June 8, 1983 I had a QSO with a VK4GLC, which is supposed to affect quite an improvement.

in the new band. For example, the IC551D

with the above modification). However, due to one

The Short Wave Magazine

1986 and further south at Lunon airport

As a result, I endeavoured to ensure the Contest is available to us

contests over 2000 km across the Australian

of the rig to lower the noise level in most cases, (this

for two stations both well sited

level rises high enough for problems to

from 2030 with 3.620 MHz as back-up. Signals to

to send in logs are the stations operating on six or

November 1986 -

over seven days you may have just as good a chance.

that installing a noise blanker in that

case would suffice. It was pointed out that

3. 4. 5.

due to one

due to one

1986 and further south at Lunon airport

or 100 km. This does have some merit if

with the above modification. However, due to one

similar band to Rockhampton with signals 5x3

my shack during our long dry summer last year

I endeavoured to ensure the Contest is available to us

interest centred around the equipment

for work stations in areas already worked.

5. Connect an 82 ohm half-watt resistor in series

with antennas on six metres, but

months. Destruction of antennas occurred

Other Figure shows a

some recognition was needed for working

happened on any VHF bands, therefore you need to try to arrive at your best seven day score.

also need a little time spent during the Contest will

needed to work stations on other countries or the islands of the Pacific. If these operators from ZL, P29, H44, FK8, P6 etc are good enough to come on and provide contacts, why

to something like it was years ago when

The Short Wave Magazine

KLM Electronics.

is supposed to affect quite an improvement.

at your best seven day score.

KLM Electronics.

the rig to lower the noise level in most cases, (this

on your feeders is 500 metres away from your

The Short Wave Magazine

the optimum point when power line hash is at its

some recognition was needed for working

low S-meter readings.

several details such as scoring, etc before submitting them to the FCM. It is unlikely you will be working stations at any time such as a few

the rigs to lower the noise level in most cases, (this

if any reader does make this modification I

some recognition was needed for working

KLM Electronics.

for May 1986, courtesy Steve VK5AIM, reports amongst other things, the

I was able to: eventually the noise blanker was unable to cope

I was able to: eventually the noise blanker was unable to cope

some recognition was needed for working

the rig to lower the noise level in most cases, (this

some recognition was needed for working

KLM Electronics.

the rig to lower the noise level in most cases, (this

some recognition was needed for working

some recognition was needed for working

some recognition was needed for working

some recognition was needed for working

some recognition was needed for working

some recognition was needed for working

KLM Electronics.
VHF/UHF RECORD CLAIMS

A number of VHF/UHF distance record claims have been received by FTAC over recent months. Because of the workload leading up to the Federal Convention, analysis of these applications has only now commenced.

Initial analysis of the claims shows the following:

<table>
<thead>
<tr>
<th>CALLS</th>
<th>BAND MHz</th>
<th>DATE</th>
<th>DISTANCE</th>
<th>RECORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. VK7DC/VK5LP</td>
<td>432</td>
<td>Jan 11, 1985</td>
<td>918 km</td>
<td>VK5/VK7 record</td>
</tr>
<tr>
<td>2. VK2KL/VK5NY</td>
<td>3300</td>
<td>Jan 15, 1985</td>
<td>3458 km</td>
<td>VK5 State record</td>
</tr>
<tr>
<td>3. VK5ZEE/ZL1HH</td>
<td>144</td>
<td>Jan 5, 1986</td>
<td>246 km</td>
<td>Australian record</td>
</tr>
<tr>
<td>4. VK3Kaj/VK3ZBJ</td>
<td>10000</td>
<td>Feb 8, 1986</td>
<td>262 km</td>
<td>Australian record</td>
</tr>
</tbody>
</table>

Once final verification is made, these applicants will be formally advised of the status of their records.

In addition, claims have been received from Wally Green VK6WG, and Brian Usher VK5KBU. Unfortunately, in both cases, insufficient information has been received to make the necessary analysis and verification possible. These applicants have been contacted to obtain the extra details necessary.

Any intended applicants for VHF/UHF records are urged to include all details specified on page 143 of the 1985-1986 Call Book. Such will ensure early verification and public recognition of the record.

Ray Roche VK1ZJR, VHF/UHF Claim Recorder, Federal Technical Advisory Committee.

Contributed by Peter Gamble VK3YRP

Contests

CONTEST CALENDAR

SEPTEMBER
- 7 "LZ DX Contest (Rules this issue)
- 7 "Tenth WA Annual 3.5 SSB Contest (Rules August issue)
13-14 "European Phone Contest (Rules August issue)
20-21 "Scandinavian CW Activity
27-28 "1986 California QSO Party (Rules this issue)

OCTOBER
4- 5 "VK/ZL Oceania Phone Contest (Rules August issue)
4- 5 "IRSA World Championship
11-12 "VK/ZL Oceania CW Contest (Rules August issue)
12 "RSGB 21/28 MHz SSB Contest
15-17 "YLRL Anniversary CW Party
18 "RSGB 21/28 MHz CW Contest
18-19 "1986 Fall CW Contest (Rules August issue)
18-20 "CARTG RTTY Contest
20-21 "CO WX DX Phone Contest
29-31 "YLRL Anniversary SSB Party

NOVEMBER
- 8 "Australian Ladies Amateur Radio Association Contest (Rules this issue)
- 8 "European RTTY Contest (Rules August issue)
29-30 "CO WW DX CW Contest

ALARA CONTEST

Well, here is the big event on the YL calendar and I certainly believe that all OMs should note this contest as well. Several stations have been provided to me by Marlene VK2FKQ, and I thank her for same. The ALARA Contest should be a friendly event and I hope that all will provide it with the support that it deserves. It will also provide chances for gaining some of those special awards for which YL contacts are needed.

I see that my compatriot, Frank W1WQY, of CO magazine fame, has also publicised this contest in his column. I wish all who enter an interesting and enjoyable contest and hope to find some time to enter myself.

I would remind all Australian Novice Operators of the Florence McKenzie CW Trophy. Check the rules properly for details.

It is of note at present that we have, here in VK5, a YL operator, Jennifer VK5Australia's Nicest Woman, as our Divisional President. So, go to it Jennifer, in this special year for the VK5 Division. I know that you will have at least all the VK5s backing you to win the Contest!

CONTEST DATES FOR 1987

I have now allocated dates for the forthcoming year in accordance with prescribed guidelines. I trust that in doing so I will have been able to stay clear of any major overseas HF contests. However, I have no real way of telling. It is necessary that these dates be set at this time for various reasons. Details are as follows:

Ross Hull Memorial VHF Contest, 1966 — December 13, 1986 to January 5, 1987
John Mayrie Memorial Field Day Contest — March 14-15, 1987
VK Novice Contest — June 27-28, 1987
Remembrance Day Contest — August 15-16, 1987

I would presume that the VK/ZL Contest will be held as usual on the first and second in October.

It should be of interest that as a result of negotiation with the Walla Walla ZX2GX, who is the NZART Contest Manager, agreement has been reached that the ZL Field Day Contest will be conducted on the same weekend as our Field Day. Also, that it is likely that the ZL Novice Contest will be held in cooperation with our Remembrance Day Contest. Discussions which have taken place make it appear quite feasible for both VK and ZL stations to operate simultaneously in virtually both contests using common scoring exchanges. This will only require minor changes or additions to our contest rules and should be of benefit to all operators. It may also add extra interest between these contests. Further details will be provided as the rules have been finally approved and are ready for publication.

I would like to express my thanks to Jock for his great tolerance and patience whilst we met this desirable state of affairs whilst I was here. Then again, on second thoughts, maybe my driving scared him so much he was ready to fold up his tent if I had asked him to do so.

The subject of rules for the Ross Hull Contest, well and good. If not, then something will have to be done about the situation. No matter which road one takes however, it will never be that easy to vary the six hour period which has proven popular for a number of years.

I certainly believe that all OMs should note this contest, well and good. If not, then something will have to be done about the situation. No matter which road one takes however, it will never be that easy to vary the six hour period which has proven popular for a number of years.

Incidentally, earlier in these notes I mentioned the name of Frank Anzalone W1WY. Frank provides me with regular copies of his contest material and I know that he sends out the same to over 20 organisations around the world on a personal voluntary basis, and at no profit. Frank has been with CO magazine for over 30 years. That could be some kind of record.

HF CONTEST CHAMPIONSHIP

I have great pleasure in finally announcing the winners of this competition for 1986. I have scored the results on the basis of the rules as published in the August issue of Amateur Radio. This means that I will award the title of HF Contest Champions for the Phone and CW modes. I have provided details below in which, although to qualify for the competition entries need to be made in three of the four applicable contests, I have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have provided scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high points in just a single contest. If some of these stations, particularly novice stations who have included scores where entrants have points in two or more. There were quite a few stations who scored high

Congratulations are due to Bob VK5BJA, for his win in the Phone Category, and particularly to Jim VK2BQS, for top scoring in the CW Category. Both operators always have submitted good logs and Jim has been a most consistent entrant in contests for a number of years.

I have not at this stage completely sorted out
matters concerning the main trophies as yet. However, both entrants can expect to receive their participation certificate bearing a photo depicting the trophy, and a letter. I had inadvertently overlooked from Ewen VK3BMV. This latter I will reply to as soon as possible. I also received another very nice letter from Arthur Mcll., Head of ENR, NSW. As these notes are written, there is just over a week to go to the closing date for the VK Novice Contest. Logs have been rolling in at a pretty fair rate and a quick review of comments indicates that it was possibly one of the most satisfactory Novice Contests so far conducted. It would appear that the time of the year finally achieved for this contest is right.

I hope that you had a good time operating in the Remembrance Day Contest and I am looking forward to having exchanged serial numbers with you in the contest. Meanwhile, my greetings to you. I trust that all your antennas have managed to weather the winter storms and have not deteriorated too much from the cold and wet. Best 73 de lan VK5QX.

ALARA CONTEST

ELIGIBILITY — All licenced operators throughout the world are invited to participate. The Contest is also open to SWLs.

OBJECT — The object of the contest is to contact as many ALARA members as possible, and to encourage contacts between amateur stations world-wide, especially in their own Continent.

LOGS MUST BE SIGNED — Logs are to also show full name, call sign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned.

Scoring
Phone: Five points for the ALARA member contacted. Four points for a YL non-member contacted. Three points for OM contacted.
CW: Double all points for CW contacts.

LOGS — Single log entry (but Australian YL Novices entering for the Mrs Florence McKenzie CW Trophy should indicate their CW score separately, also). Logs must show date/time UTC, band, multiplier, call sign worked, report and serial number received, name of operator of station worked, and points claimed.

SAMPLE LOG

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<td>01/08/2000</td>
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The many inquiries I have had after the article on the ETM-8C keyer in July AR has provoked me into a better explanation of electronic keyers as I have found them.

I will attempt to put my meagre two years of learning about them into this article, but it will be in plain English translation as I am still having trouble following the logic circuits and, although I have built one accu-keyer (see the ARL Handbook), I have trouble wading through the circuitry to find out exactly how it works.

**BASIC MORSE**

Using the length of a dot as a base, the length of a space between elements should be one dot length. The length of a dash should be three dots, spaces between letters should be three dots, and spaces between words should be five (or more) dot lengths.

If a signal has its dots and dashes too long with respect to the spaces between them it is said to be weighted. But it is sometimes called the dot-dash ratio, where the dash is longer than three dot lengths.

The main effect of weighting is that the dots should be shorter than unweighted Morse at the same speed.

Incidentally, the length of the dot varies from 200 milliseconds at five words per minute, down to 40 ms at 30 WPM, and only 20 ms at 60 WPM.

The main reason for using an electronic keyer is that it is easy. There are a few steps from the hand pump to the electronic keyboard and they require minutes, not hours, from people wanting a faster sending method. After the straight key there were numerous mechanical keyers which usually involved a weighted spring to give a short series of dots and dashes.

The most basic electronic key has a series of clocked pulses (dots) available by pressing the paddle to the right, the dashes would still be generated by pushing the paddle to the left for the required time. This type of keyer is readily available today and sometimes has an automatic dash where you can hold the dash paddle on and get a string of dashes. It is also usual to find a speed control at this level.

The next model electronic keyer has two paddles spaced about 10 mm apart so that the digital circuitry can be designed to give iambic operation. Iambic is when you press both paddles at the same time and get dididahdidahiddah ... etc. If you want dahdahdahdahiddah, you must squeeze the dash paddle first. Depending on when you let go, you will end in either a dit or a dash. With this type of keyer you can also send a series of dits and, without removing your thumb from the dit paddle, you can insert a dash by tapping the dash paddle at the appropriate time. This is useful when sending F or L. Conversely, a dot can be inserted into a string of dashes in the same way for the letters Q and Y.

**DOT-DASH MEMORY**

Most keyers have this feature. It means that if you squeeze the key quickly you will get either an R or K depending on which you squeeze first. What happens is: even while the circuit is generating the first dot and dash, it remembers that both the paddles were pressed together for a small amount of time, so it inserts a dot after the dash, you were probably letting go of the paddles while the dash was being generated. With the dot-dash memory disabled you would get an A instead of the R, and the timing of the squeeze will be very critical if you want an R. This is because you have to open the paddles after the last dot starts, but before the next dash starts, we are talking milliseconds here.

If you want an A, etc., you must flick each paddle separately while the dot-dash memory is operating, but this is much easier than trying to get the timing right with the dot-dash memory disabled. Anyway, the disabling of the memory requires more components.

**AUTOMATIC CHARACTER SPACING**

The accu-keyer circuit (ARRL Handbook) had an auto-space feature which worked like this.

If you left a space of more than one dot length in your sending the keyer automatically held up the initiation of the next dot or dash for a time of three dot lengths, even if you only left a space of one and a half dots. So you could be really sloppy with your timing and still get the character spacing perfect every time. There is only one drawback, higher speeds of 25 WPM, the dot space is so small (about 50 milliseconds) that if you are to slow slapping the dot-dash for the letter A, the circuit thinks you are sending E T and puts in the space.

I think this is what brass-pounders mean when they say that keyers sometimes have a mind of their own. Letting the letter A in longer than a dot, you have more time to let the dash paddle off before tapping the dot. So if you hear someone jumbling up their As by sending E T or his W by sending E M; or his L by sending E MM, you will know exactly what is going wrong. The only way out of this dilemma is to disable the auto-character space or slow down.

Well, except for keyboards, that about covers it. I will not go into keyboards as I have never used one (for Morse) yet, but if you can type, you can send Morse with one. And if you can type fast, well ...

But learning to send on a good keyer is probably easier than learning to touch-type, so I will leave it there.

If you want more convenience, say for contesting, you can go for an electronic memory, or even a taped message. I will refer you to the excellent article in May AR, by Ron Mills VK5XW, or even a taped message. I will refer you to the excellent article in May AR, by Ron Mills VK5XW, and Lindsay Collins VK5GZ, on their memory keyer.

If you are an avid CW operator who is just getting tired of a hand pump, or if RSI is giving you trouble, try some of the electronic keyers and see what you think.

Even if you do not particularly like CW because it is so hard, it may be worth your-while building a cheap keyer just to see how easy it really can be. This is how I became interested in CW and that was before I took any of the amateur radio examinations. I did have a bit of a problem going back to the hand key for sending in the exams.

By the way, if you have anymore questions, do not hesitate to drop me a line and I will see if I can answer them. If I can't, I guess I will have to learn some more.
It seems to be the done thing by a number of operators not to use a log book any longer, since the necessity was abandoned by the Department of Communications.

I feel that the two main necessities of operating are a log book and using UTC time, even if one is not an ardent DXer, as it is necessary to check SWL cards and one has a record of all stations worked at their fingertips. SWL cards are very valuable to the listener and in some countries they are obliged to show evidence by way of submitting a log and a high number of received cards from amateurs, before they are allowed to sit for the amateur examination.

If one does not keep a log, they have no way of verifying that they were on the air at that time, as some cards come in up to three or four years later and no one’s memory is that good.

So for good operating practice, please keep a log book, so that the standard of QSLing will be uphold and that your card is an authentic record to the recipient.

No wonder you’re such a big gun on 20 metres!

ANTENNA ERECTION

Jan and Jay O’Brien, K6HHD and W6GO, who publish the excellent QSL directory, W6GO/K6HHD QSL Manager List, are back on the air after moving QTH. By all accounts, complimented by a lot of finger biting, they should have a fine signal which they can point to any part of the world.

Much thought, preparation and planning went into the erection of a 48 metre tower and three monoband antennas. A KLM dipole for 75 and 80 metres which is 27.5 metres long is at 47 metres, a KLM four element, 40 metre beam with a boom length of 13 metres and six elements situated at 43 metres and weighing in at 57 kg, resonates on 20 metres. This unit has a 17.5 metre boom.

The whole tower and antennas were erected in about three and a half hours, with, wait for it, the aid of a very skillful pilot in a helicopter. The first part of the exercise was to erect the bottom half of the Rohn 55 tower which measures 21.5 metres on to the base and position the two sets of guys and tension them. Incidentally, the base is resting on one cubic metre of concrete and there are approximately three cubic metres holding the guy anchors.

No wonder you’re such a big gun on 20 metres!
UNWELL SWL
Recently, Eric L30042, suffered an injury which necessitates a lengthy stay in hospital. Eric, best wishes for a speedy recovery from all DXers and readers of this column. A speedy recovery is essential so you may resume listening on the bands.

CARDS
Jim G3OKQ, who had numerous QSOs from Pitcairn as VR6JR, should be starting to answer his stack of cards now, so please be patient and do not repeat requests.

CARDS BY THE KILOGRAM
A note from Neil VK6NE, the WIA Federal QSL Manager, states that he received a parcel of cards from the USSR. The weight was 1.875 kg and 1.050 Kg were from SWLs, with over 50 percent of the SWL cards reporting hearing a USSR station in contact with a VKO or VK9 amateur. The QTH on the received cards to different operators were predominantly from the same city or Oblast.

Unfortunately, it is not in the best interests of the operators. Incidentally, Neil is still eagerly awaiting the postman to deliver his S9 card.

SELVAGENS ISLAND
If you worked the call CRS1S in August, last year, and are still awaiting a card, worry no more, as if you are not going to receive one, it is believed that the QSL Manager, CT3BD, has openly said that he has no intention of answering the cards. I hope this is not true as I feel that it is an irresponsible action that should be reported to his superiors. Also, what is going to happen to the money and IRCs that have been sent.

One can guess, as unfortunately it has happened before and sad though it may be, I predict it will happen again in many times. Unfortunately, it is not in the best interests of the hobby.

BELATED WISHES
Belated birthday wishes to Father Moran 9N1MM, who celebrated his 80th birthday on May 30.

Father Moran, has given many a new country in the long time he has been active from Nepal, whilst he has been a teacher at the Godavari School, near Kathmandu. He is very active and a hobby.

He has openly said that he has no intention of stopping the long time he has been active from Nepal, before and sad though it may be, I predict it will happen again in many times. Unfortunately, it is not in the best interests of the hobby.

SURPRISE!
Don't be surprised if 1957, or before, sees individual stations being licensed in the Peoples Republic of China. A recent meeting by the authorities was due to consider such a move.

SURPRISE!
Another prefix, this time from New Caledonia. The QSL Manager, operations from the City of Birmingham in a bid to hold the 1992 Olympic Games from that city, is having six operating stints this year. Each operating stint will have a district QSL card. The June 24/15 operation centred Horse Jumping, the theme for the July 18/19 schedule featured Athletics. These cards are well worth having in one collection, so keep listening. Bureau QSLing is in order, considering the price of postage which has escalated dramatically.

CHANGE OF HEART
Mike A71AD, as mentioned previously in this column, had to leave his logs behind for inspection, by the Qatar Telecommunication Authorities, when he left the country.

The authorities have now allowed Mike to retrieve those valuable logs and the calls of A71AD, and his new call, S541T, can be QSLed by sending direct to Mike Smiedl, PO Box 7121, Nicosia, Cyprus.

PAPER WARFARE
A note from Steve VK2PS, says that he has been fighting the bumbling red tape paper war and has had little time for using the rig, but managed a couple of QSOs which were quite interesting. One was a chat with HA4KYN, who was using a 20 element log periodic antenna which, believe it or not, is portable and can be adjusted to the angle being adjustable. This station was booming in with a 5X9 plus signal. Others that Steve had a few words with were EA8ACH on 20 and a nice contact with Lynn WH4RA on CW.

Steve received a nice selection of cards during the month, including 5E1EJ, EABANR, JT1B1H, VOIQA, VB6TC, VSBAD, X031Y, VX9DXD, YE3C and 2K2KH.

The YE3C card was to commemorate the 40th Anniversary of the Indonesian Army Signal Corps. Another keen DXer, Jim VK3YJ, has been tied up with other commitments but has managed to work 3COA, 5H2ZR, 9H1EL, 9J2BO, 9V1TL, 9Q5CT, A22DP, AP2PS, C21R, H7AP, H50A, OA9AM, PA0QTS, L1TA, UIGM, VZ2EPABKY, VK0L, VU3IO, VOI1Z, W0B6QO, W0JCEBKH7, ZLATA and ZS2SB on 20 metres SSB.

BITES AND PIECES
Doublet operations are from stations signing with the prefix SU8 and the station 7002F which has been heard on 20 metres. Other doubtfuls to beware of are 4W1NN, KH8KY, P33UKK, ZA1C and ZASRZ. * * * S1XMAE, was used before the radio room of the battleship George An Moffett to commemorate Greek Navy Week. * * * YM3KA, an unusual call, was aired from Izmir. * Special QSL cards are available for working 1Y2KWK.
**BEACONS**

Tim Mills VK2ZTM
FTAC BEACON CO-ORDINATOR
PO Box 204, Willoughby, NSW, 2068

The HF Beacon concept was described in the last report. This month we will look at VHFi/UHF Beacons.

In Australia, six metres to 23 cm has been band planned with 200 kHz being set aside for beacons. This frequency is spread over a (distant) path which with the second last figure in the frequency indicating the State — eg the two metre VK2RSY Dural Beach is in 144.420 MHz. The beacon frequency occupies the 4 to 5 region of the band with allocations every 5 kHz — eg VK2 also has 144.425 MHz. There is a secondary allocation for each State's other two channels, and except on six metres, this is between .5 and .6. On six metres it is .3 to .4 to avoid the FM allocation of 52.525 MHz.

A variation to the above is a couple with a VHF systems. The harmonic relationship of 7 MHz to 140 MHz is one of the most important because they are points of reference, and can be observed by manual or automatic means.

A few of the older beacons, for various reasons, have stayed on their original frequencies. Pre-broadcast planning is likely to be home-brew on the second last figure in the frequency, often with the first crystal which came to light from the junk box.

The role of a beacon has been mentioned previously, and as I view it includes:

- A local signal source of known characteristics for receiver, antenna adjustment and reference.
- A signal source over a (distant) path which can be observed by manual or automatic means. (Project Assert did this in the late 1970s)
- They provide signal sources to see if there is a band opening or a path between your location and the beacon.

I think that there is little to add to the operation of beacons at VHFi/UHF frequencies. However, it is at microwaves that beacon guidelines need to be formulated and I ask all interested parties to contribute.

First, these frequencies are perhaps the last for amateur experimentation. They already have heavily commercial use, and in most portions we are the secondary service. There are only a few amateurs in radio to other bands and much of the operation is likely to be either home-brew on converted/adapted equipment. (You don't go down to local store and buy equipment for your satellite station operating with the satellite, and from 147 MHz on the satellite coverage than had been thought possible. It needs to be within the reception bandwidth of the receiver, antenna adjustment and reference.

Why would anyone want to put a beacon on a microwave frequency? I would think for the same reasons outlined above. Certainly it provides a local — constant — signal source, and signals from a location. Perhaps the most important thing is the beacon frequency's relationship to band use. It needs to be within the reception range of equipment in use but not to interfere with normal radio use.

Amateur POPULAR AMATEUR RADIO operators in West Virginia have been able to contact with ZL1AOX in New Zealand and several with GBMSZ in the United Kingdom, during the series of tests.

The satellite operation with the satellite changed the two-metre FM signal received from the hand-held unit to SSB on the 436 MHz uplink to the satellite, and from 147 MHz on the satellite downlink to an amplified two-metre uplink to the hand-held unit. Originally the setup used phone-patch hookups between the repeater and the satellite. This was later eliminated by the use of Gunn plotters between the repeater site and the satellite station.

According to an AMSAT official, WA2LQQ, "this historic event marks the vanguard of amateur satellite communications for utility use by minimally equipped amateurs. Nothing can beat the flexibility of your own OSCAR station, but for those without our setup, this seems a good way to taste the wine before one buys the bottle."

An editorial in Westlink commenting on this application test said: "signals the beginning of a new era of communication limited to a given locality. Now, that same repeater when tied to an OSCAR-10 earth station ... has the ability to provide tip users with much greater coverage than had been thought possible. It means that high frequency traffic nets, that currently fight the effects of propagation anomalies and intentional and unintentional QRM, can begin to think about the possibilities that lie in linking themselves via satellite. It also means that in time of emergency, the extreme reliability of satellite communications can be depended upon for the saving of lives. The possibilities are endless."

A free information kit is available (by sending IRCs) from: AMSAT, PO Box 27, Department GW, Washington, DC 20044 USA.

Written by Ralph McDonough K8HN and reprinted from Telecommunication Journal, Vol 53, V1986

**DIGITAL FINGERPRINTS**

The Australian Federal Police and state police departments have been involved in a multi-state operation to trace the NSW Police's computerised fingerprint database.

They will eventually use NEC equipment to digitally record fingerprint images. The NEC equipment will digitise the fingerprint images in a matter of seconds and then uses a series of tests to confirm the identity of the person involved.

The database contains 2.6 million individual prints and has the capacity to handle six times that amount.

**AMATEUR RADIO** September 1986 - Page 43
Bulgarian Amateur Radio Club, and is available to all

This Award is issued by the Shepparton and Dis-

ters AUSTRALIA. This event is to enable amateur radio

As 1986 is the Centenary of the Marion Council,

award called the Paddle Steamer Industry Jubilee 150 Award.

Applicants require 20 QSO points with different

Applicants require 10 QSOs with LZ1 and one with

Applicants require 10 QSOs with LZ1 and one with

Applicants require 10 QSOs with LZ1 and one with

Applicants require 10 QSOs with LZ1 and one with

Applicants require 60 QSO/SWL reports with

Applicants require 10 QSOs with LZ1 and one with

Applicants require 60 QSO/SWL reports with

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Applicants require 10 QSOs with LZ1 and one with

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Applicants require 10 QSOs with LZ1 and one with

Applicants require 60 QSO/SWL reports with
RALLY AUSTRALIA AWARD

This award is presented by the Redcliffe Radio Club. Its objective is to travel around Australia by radio, making progressive contacts as you go. The award will be available in two grades — a Basic Award and an Enhanced Award, with mode and/or band endorsements available.

Basic Award — requires contacts with 25 cities and towns throughout Australia, with mandatory contacts to be made with the Redcliffe, the contact will still be valid, provided this member made the contact from his usual QTH.

Mandatory Check-points — Redcliffe; Brisbane; Sydney; Canberra; Melbourne; Hobart; Adelaide; Perth; Darwin; Mount Isa; Townsville; Redcliffe.

A further two contacts in VK2, VK3, VK4, VK5, and VK6 and one in each of VK1, VK7 and VK8 must be made in progressive order, in location, date and time with mandatory check-points.

The Rally can be run in the order as outlined above (clockwise) but you may also elect to run in the reverse order.

The Enhanced Award — The Enhanced Award requires the following:

Contacts with all Mandatory Check-points.
Points totaling 1000 from progressive contacts (location, date and time) throughout Australia (see below).

Extra time points will be awarded for completion of the Rally within three months.

The Rally and/or the contact is for contacts within—

VK1 ... 20 points; VK2 ... 10 points; VK3 ... 10 points; VK4 ... 10 points; VK5 ... 20 points; VK6 ... 20 points; VK7 ... 20 points; VK8 ... 20 points.

Time bonus points apply if the rally is completed in seven days ... 150 points; 14 days ... 120 points; 21 days ... 100 points.

For every 500 miles or part thereof of two contacts within ten points. This means that, should you not be able to finish the Rally within three months, the basic 1000 points are required.

While contacts made in Australia may be made, an attempt to return to the coast-line as near as possible to the last coastal contact is mandatory.

To encourage more inland contacts, should the return to the coast be at the location where the coast was left and the second contact is not with the same station or if the same coastal station is worked, the second contact would be considered, the inland contact is worth an extra 50 points.

(CLOSED)

(RQST: If, for instance, you work/hear a station in Rockhampton and then a station inland at Rockhampton, there are three ways to return to the original Rally.

1. One tries to work/hear another station in Rockhampton.

2. One tries to work/hear the same station in Rockhampton, but only after 48 hours has elapsed.

3. If it is impossible to hear/contact Rockhampton, then one can try to make contact with a Gladstone or Bundaberg station (clockwise trip) or Mackay (anti-clockwise trip). However, in this case, the Longreach station will only be worth 10 points as a mandatory check-point, subject to time allowance.

It is therefore essential to have a map of Australia ready at all times in the shack.

Applications for this Award must be accepted and submitted by August 31, 1986, showing date, time, call, band, mode and location of the stations worked. Certification to be signed by two radio amateurs. (QSL cards are not required for the Enhanced Award).

Cost of the Basic Award is $4 or 12 IRCs. The Basic Award consists of a well-designed two-colour Certificate and will be sent via air mail.

Listeners can also participate and must follow the same rules on a heard basis, as stated above. Their application log extracts must also include the call sign of the station worked by the logged listener.

The Enhanced Award is a specially designed 190 x 280 mm plaque.

Awards Program of the Hungarian Radio Amateur Society

General Rules as at January 1, 1986.

1. Hungarian Awards can be obtained by licensed radio amateurs and SWLs world-wide. The specific rules of awards are given below.

2. All amateur bands and modes may be used, except contacts via repeaters.

3. Contacts/reception may be made from any location within the same DXCC country. Each station may be contacted only once on any band and/or mode.

4. The log should show the call sign/s, name and QTH of the applicant, as well as the following information:

Station Worked/Heard; Date; Time in UTC; Band; Mode; Name in VKX, DXCC Point; Country; Mode and if worked by a member of the Redcliffe Radio Club, contact will be worth an extra 50 points.

Should the Redcliffe Radio Club member not be a resident of the City of Redcliffe, the contact will be worth an extra 50 points.

The Rally can be run in the order as outlined above (clockwise).

To encourage more inland contacts, should the station being worked by the heard station be in the call area/more than one band. Manager: Radio Club hA1KSA, PO Box 79, Gyor, Hungary. H-9001.

Savaria Award

The Radio Amateur Society of Vas County issues this Award. The applicant must submit proof of contacts made on or after January 1, 1976.

Applications must obtain 10 different HA1 or HG1 QSL cards. Manager: Savaria Radio Club, Puskas Tu, Szombathely, Hungary. H-9700.

Balaton Diploma/BD

The Radio Club Siofok issues the BD. The applicant must submit proof of contacts made on or after January 1, 1957.

Amateurs must make two-way communication with the station identified in a 4-digit indicator. (See rules a) or b) or c) above). Stations require 15 points and at least one contact should be with a member of the Radio Club Siofok.

a) Radio Club Siofok and its members count as five points. HA, HG3KJK, KHL, GI, GJ, GQ, HE, KL, HQ, HZ, IG, IK, IQ, IS, NG, 4XW, 8UPA.

b) Stations with a permanent station from the Balaton area, counted from the Balaton area, will only be worth 10 points as a mandatory point.


Manager: Jozsef Turjanyi HA3GJ, PO Box 78, Siofok, Hungary. H-8601.

Budapest Award/BPA

This Award is issued by the Radio Amateur Society of Budapest. Applicants must submit proof of contacts made on or after January 1, 1959.

Applications must present proof of contact with at least 20 different QSL cards from HA, and HG stations. Manager: Verebes Janos HAY5R, PO Box 64, Budapest, Hungary. H-1475.

Hungarian Rummy Diploma/HRD

The Amateur Radio Society of Somogy County issues the HRD Awards. The applicant must submit proof of contacts made on or after September 1, 1972.

The HRD Award is issued in three categories.

BRK-ZE: "Hungarian Rummy" collecting 14 cards in accordance with the rules of the game.

SILVER: full collection of one of the four series plus one Joker of the same colour. For example — cards 1 ... 14 plus red Joker. /14 cards.

GOLD: full collection of one of the four series and one Joker. /14 cards.

HRD-108: two packs of QSL cards are necessary for the Award from 108 different stations.

Hungarian Canasta Diploma/HCD

The Amateur Radio Society of Somogy County issues the HCD Awards. The applicant must submit proof of contacts made on or after September 1, 1972.

The HCD Award is issued in three categories.

BRK-ZE: "Hungarian Canasta" collecting 14 cards in accordance with the rules of the game.

SILVER: full collection of one of the four series plus one Joker of the same colour. For example: cards 1 ... 14 plus red Joker. /14 cards.

GOLD: full collection of one of the four series and one Joker. /14 cards.

HRD-108: two packs of QSL cards are necessary for the Award from 108 different stations.

Note: Cards collected on or after April 1, 1980 are valid for the HRD-108 and HCD Awards.

Amateur stations belonging to the radio club of "Twodar Puskas" can send any kind of HRD cards.

Manager: Jozsef Turjanyi HA3GJ, PO Box 78, Siofok, Hungary. H-8601.

Allocation of the HRD cards:

Please turn over...
A/V/HG

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<th>Call Areas</th>
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<th>Heart</th>
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Manager: Janos Retkes HA8UB, PO Box 22, Tiszaekeske, Hungary, H-6061.

VIDEOVISION AWARD

The Videovision Radio Club issues this award for applicants who submit proof of contacts made on or after January 1, 1968.

Only HA4 and HG4 QSLs are valid. There are three types of special cards, 3-4-3 different cards illustrating a BC receiver, a TV receiver and computer set respectively.

This Award is issued in three categories:

- BRONZE: one complete set of any group.
- SILVER: a complete set of any two groups.
- GOLD: all ten cards.


DUNAKANYAR DIPLOMA/ DD

The Radio Amateur Society of Pest County issues this DD Award. Applicants must provide proof in the form of three different QSL cards from the HA

Stations are as follows:

- HA5BGCA-FZ, KCA-KFZ, LSA-LZ.

Manager: Imre Kelemen HA8CH, PO Box 673, Szeged, Hungary H-6701.

WORKED HUNGARIAN DISTRICTS/WHY

The Hungarian Radio Amateur Society issues this Award and applicants must submit proof of contacts made on or after January 1, 1968.

Stations need 10 QSL cards from any five Hungarian call areas/HA: HG1, 2, 3, 4, 5. Two cards are required from each call area on two bands.

Manager: Janos Retkes HA8UB, PO Box 22, Tiszakecske, Hungary, H-6061.

INTRUDER WATCH

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somonville Road, Hornsby Heights, NSW 2077

Last month as I was compiling my 48th monthly Intruder Watch Summary for distribution, it occurred to me that this meant four years had passed since I was appointed Federal Intruder Watch Co-ordinator. Four years! It seems like only yesterday that I was struggling to put together the first of many such summaries, and trying to get it into some sort of business-like order. In those days, I did it all on a typewriter, which took about 12 hours to complete, after having received all the reports from contributing amateurs and SWLs around Australia. Now I do it on a computer, and it has cut the time by three-quarters. I won't spoil the effect by telling how long it took me to tame the computer! And I rather suspect that the computer is still grinning at my efforts from behind the safety of its monitor screen. But the blank look I get from it sometimes is what I fear most.

CONTRIBUTORS AND INTRUDERS

Many people have contributed reports to the Intruder Watch during those four years, and I take this opportunity to say thank you.

Hopefully, these same people, and others, will continue their support in the future. Those who helped last May were:

VK2s BQS, PS, PL, G HA Bradford; VK3XB; VK4s AG, AV, BG, BHJ, BIN, DA, KHZ, OD; VK5s GZ, VK5GJ, OD, RO, XV, XZ, VK7s DG, RH; VK8s HA and JF.

Reports broke down as follows:

AM-mode — 419; CW-mode — 134; RTTY — 113; other modes — 75; and 45 intruders supplied us with their call signs.

INTRUDER CALL SIGNS

Norman VK4BHJ, one of the IW's consistent good observers, writes regarding the numerous stations using CW-mode, and originating in Vietnam.

As mentioned in AR June 1986, these stations, as listed below, are all part of the Vietnam News Agency. Hanoi. The call signs are listed with the country listed in brackets being the country to whom the call is legitimately allocated.

- VRQ — (United Kingdom)
- VCN — (Canada)
- KFB — (USA)
- CFK — (Canada)
- TRB — (Gabon Republic)
- VZC — (Canada)
- NBZ — (USA)
- PKJ — (Indonesia)
- VMQ — (Australia)

In other words, these transmissions are not originating in the country accredited the allocation of the call, but are all being used by the Vietnamese News Agency. Still, I suppose if your intention is to not observe the radio regulations, it doesn't make any difference how many rules you break — that seems to be the typical intruder's philosophy, anyway.

The transmissions for these stations is of the propaganda/news type variety, with NBZ and PKJ very often on the international 20 metre beacon frequency of 14.100 MHz.

So there you are for this month, and I hope you have been having more success with DX than I have!... 73.
AMAZING HIGH
WITH COMMUNICATIONS
ACCESSORIES FROM GFS

NEW BROADBAND
OMNIDIRECTIONAL
ANTENNA
25 TO 1300 MHZ

The new D-130 is one of the latest generation full coverage H/V/UHF omnidirectional antennas. It provides continuous operation from 25 to 1300 MHz and is ideally suited to the likes of the AR-2002 or the ICOM IC-7000 scanning receivers. Also capable of transmitting on 6m, 2m, 70cm, 23cm bands.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>100 MHz</th>
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FB SERIES CABLE & N CONNECTORS

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LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE

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HF-VHF SWR-POWER METER

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<th>TYPE</th>
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<tr>
<td>HS-260</td>
<td>$495 + $18 P&amp;P</td>
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NEW DEBEGLASS WIRE

Now dress your tower without having to break the wires with dozens of egg insulators or worrying about them corrodine away due to a salty atmosphere. Our Debeglass wire alternative is made using continuous filament fibreglass wire which is UV stabilised. Use Debebox to crimp and charge. Carrying case and antenna.$749 + $18 P&P

BROADBAND OMNIDIRECTIONAL ANTENNAS FOR SCANNERS

SCAN THE BANDS WITH OUR MICROCOMM SX-155 PROGRAMMABLE POCKET SCANNER

This new unique scanner provides coverage of 26.3-44.5 MHz, 136-174 MHz and 380-514 MHz with a sensitivity of less than 3.5 uV. It has a range of 40 memory channels, total 160 memories. A high scan speed of 16 CH/SEC. Auto search and store... More C1000 Power, Priority Coverage, Channel and Hour, Pre-recorded Nicad battery pack, 12 hour charge, Selectable Scan Search, Relay PTT for 26-97 MHz, 2KHz or 2MHz. Price: $255 + $18 P&P, $357 + $18 P&P

FOR THE RTTY OPERATOR

MDK-17 (KIT) MOD-DEMOD

A high performance RTTY CW modem kit for use on a computer or bedside. Offers high noise immunity on receive. $199 + $18 P&P, $290 + $12 P&P (assembled).

NEW HS-VKS 5 BAND HF VERTICAL

Fully self supporting & complete with self supporting rods, radials, 60-40-20-15 & 10 metres. $538 plus $18 P&P

NEW DEBEGLASS WIRE

Now dress your tower without having to break the wires with dozens of egg insulators or worrying about them corrodine away due to a salty atmosphere. Our Debeglass wire alternative is made using continuous filament fibreglass wire which is UV stabilised. Use Debebox to crimp and charge. Carrying case and antenna.$749 + $18 P&P

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GFS HAVE FULL SERVICE FACILITIES FOR CB, AMATEUR AND COMMERCIAL RADIO EQUIPMENT AT REASONABLE RATES.

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AUSTRALIAN DISTRIBUTOR

GFS ELECTRONIC IMPORTS
Division of Deribar Pty. Ltd.
## OSCAR-10 APOGEESE
### SEPTEMBER 1986

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**Contributions this month are from AMSATTelemail, Graham VK5AGR, and 6bb VK5JBB.**

**JAS-1**
The latest item was posted to the AMSAT-Telemail bulletin board by Barry Yoneda JA1ANG.
The Japanese Amateur Radio League (JARL) JAS-1 OSCAR satellite is still scheduled for launch on July 31, 1986, at 2030 UTC. The lift-off pad for Japan's H-1 launch vehicle is located on Tanegashima Island off the coast of South Kyusu, at 30° 23M 48S latitude and 130° 58M 23S east longitude.

**AMSAT Australia**

**National Co-ordinator**
Graham Patoff VK5AGR

**Information Nets**

**AMSAT Australia**

Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.665 MHz — Summer: 7.064 MHz

**AMSAT Pacific**

Control: JA1ANG
1100 UTC Sunday
14.305 MHz

**AMSAT SW Pacific**

2200 UTC Saturday
21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

**Acknowledgements**

Contributions this month are from AMSAT-Telemail, Graham VK5AGR, and 6bb VK5JBB.
### OSCAR-10 APOGEES OCTOBER 1986

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<th>SATELLITE</th>
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### OSCAR-10 Analysis and Proposals — Ron Dunbar WOPN, June 17, 1988

1. **Current Status of AO-10**

   **OSCAR-10** was three years of age yesterday. Despite a burn which seemed to be ruled solely by Murphy’s third postulate, the S/C has performed as well as could reasonably be expected, considering the bent antennas, less than optimal bit, frozen “O” rings, etc.

   The satellite was designed with reliability as one of the foremost objectives. Since previous birds had succumbed due to eventual battery failure, two sets of batteries were placed on board: 10 main batteries and 10 auxiliary batteries. To date, the main cells have performed so well that there has been no need to bring the auxiliary cells on-line. Premature charging of the auxiliaty cells would merely serve to start their “lifetime countdown” therefore, they have never been charged in orbit.

   As the spacecraft aged, the effects of the high perigee (4000 km instead of the desired 1500 km) began to be noticed; at this altitude, the S/C spent significantly more time traversing the radiation-flooded Van Allen belts surrounding the Earth. Each trip through this area resulted in continuous doses of undesirable radiation being experienced by most onboard components. The effects of such radiation are cumulative. The overall level of radiation induced charge keeps adding to the previous exposures.

   The Integrated Housekeeping Unit (IHU, speak ‘onboard computer’) memory chips are the most susceptible to excess charge of all the onboard components, since they function by storing a definable charge to represent a one or zero in a particular memory location. Over a period of time, random bits throughout the 16k memory began to fail. This did not present a disaster, since the S/C designers had included sophisticated error correction circuitry for just such an expected eventuality. The correction circuitry could detect and ‘repair’ a single-bit error in any given Byte of memory. It would detect, but not repair, a double-bit error per byte.

   On May 17, 1986, the error correction circuitry was apparently overwhelmed by the damaging effects of an influx of high energy particles from the Sun. The software Operating System had lost control with the Mode B transponder locked on and strings of meaningless bits being transmitted on the beacon.

   As a result of many hours of diagnosis and attempts to correct the situation by ZL1AOX and others, a limited function software system was reloaded. Subsequently, limited memory tests were performed in an attempt to assess the extent of the damage and possible methods of bypassing the faulty areas of memory.

   Before these tests could be completed, the S/C was apparently subjected to yet another bombardment of radiation which reduced even the minimal operating system to an essentially useless state. In this state, the transponder and beacon are occasionally activated in an uncontrolled manner. Subsequent heavy usage by ground stations then leads to a low battery voltage condition which prevents Command Stations from being able to communicate with the IHU.

   Finally, on May 19, ZL1AOX was able to deactivate the transponder and beacon, which is the current condition (providing they have not anomalously activated again by the time of this writing).

   The Battery Charge Regulator (BCR) control inputs are uncertain, since no telemetry is being received by the Ground Command Stations. This means that we have no way of knowing what the battery conditions or charge rates actually are, however, even if the computer-controlled latches have been reset to zero, a hardware default setting exists which is determined by the logic of resistive voltage dividers. If the BCR control latches should anomalously be set to all ONES, there exists the possibility of OVER-charging the batteries. This could potentially result in some effects due to the gas pressure build-up within the batteries themselves. This pressure is normally vented, but vents have been known to plug up, sometimes leading to a condition known as “fast rise-time pressure relief” (aka ‘explosion’).

   As you will come to see in the paragraphs to follow, the UNDER-charging condition has a much longer term effect; such is not true with a sustained OVER-charging condition. The potential of OVER-charging should be avoided if at all possible, due to the potential damage which could result. Under certain conditions, UNDER-charging can be of actual benefit, as we shall see.

2. **Forecast of Events Through September 1986**

   Given the current attitude of the spacecraft, the position of the orbital planes and the orbital parameters, the sun angle will change from the current value of approximately -8 degrees to -49 degrees by 7/31 and to the NO POWER condition of -90 degrees on 9/11 as indicated by the following chart (courtesy G3RUH).

   **Daten 1986**

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<th>SUN ANG</th>
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<td>May 22</td>
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   **"An attitude change is ESSENTIAL before the end of July" (G3RUH).**

   If no intervention occurs, the S/C will reach a power down condition sometime prior to September 1st. At that point, the spacecraft may become a disastrous event; let us analyse this condition a little more thoroughly.

   Of the many events which will occur at or near the extreme sun angle, the following are of most concern:

2.1 Thermal stresses...
3.0 Corrective Actions Available

3.1 Do nothing until after September 15, 1986

If we merely wait until the inevitable occurs, we stand the very good chance of even further memory deterioration. The attendant prospect of not being able to do anything about S/C attitude or onboard conditions. Erratic I/HU operation will take place anyway; main battery discharge will occur, the IHU's memory will become increasingly frustrated and discouraged and begin to seek other interests after we fought so hard to get their attention in the first place. Knowing their organization, I do not expect many votes for this option.

3.2 Perform Memory Diagnostics and Attempt a Patched Operating System

While there will probably be a significant amount of good reasons to perform some tough objective analysis before embarking on this route. The time and effort to perform this task is indeed formidable. The chance of long-term success in this direction seems small, indeed. By the time a thorough memory analysis is performed (if it can even be done at all), further radiation damage will probably have already occurred, thus rendering the analysis useless. In addition, this activity would necessarily involve personnel who are already swamped with Phase-3C activities. Time stolen from these conventional tasks could be considered a situation of similar magnitude a few years from now with the next satellite.

Power Down as Soon as Practicable

As long as the first three Bytes of memory remain functional, there are good reasons to use assembler language routines to perform one to a few functions at a time. It would be necessary to periodically run a memory diagnostic on at least a portion of memory as insurance. Some of the functions which are considered most important are:

3.3.1 Memory diagnostics
3.3.2 Transponder and beacon control (no transponder usage)
3.3.3 BCR service to control battery charge rates
3.3.5 Minimal attitude and spin-rate control

Functions 3.3.1 to 3.3.5 can probably be performed by the Ground Command Station (GCS) group with only minimal assistance from the spacecraft development team, thus freeing them to concentrate on 'hardening' the Phase-3C system.

Proposal, Rationale and Probable Benefits

With the information currently available to me, I propose that alternative (3.3) be implemented under the following conditions:

4.1 Bring the spin rate up to 45 or 50 RPM for as brief a period as possible
4.2 Intentionally begin changing the S/C's attitude toward a -90 degree sun angle to shorten the total "outrage" period.

While the IHU supply voltage begins to drop below it's normal 10 volt level, activate the transponder and beacon, then load all of memory with a benign instruction code and "hang" the CPU in a tight loop to minimise the chance for erratic behaviour.

The purpose of activating the transponder and beacon is to hasten the discharge process as much as possible. By the time the IHU supply voltage begins to drop below its normal 10 volt level, erratic and unpredictable from 6.0 to 5.2 volts and totally inoperable below that supply voltage level.

The erratic window region does generate a certain amount of concern; in this region, the CPU may do anything. It may perform anomalous jumps to erroneous program steps, it may perform several jumps, it may perform no jumps, it may stop and sit for a time or it may become totally inoperable. Murphy's Law is strictly enforced in this region. The most harmful thing which can be imagined is a jump to a harmless region.

There are certain techniques which can reduce this hazard; they will be addressed later. The major point to be made here is that the time spent in this 'transitional area' should be minimised by any means possible.

3.4 When the IHU supply voltage begins to drop, the CPU will begin to take erroneous action such as reducing the spin rate to 0 by activating all magnet coils in a DC state, rotating the antennas away from the Earth, shutting down the beamformer by erroneously setting the BCR control latches, etc.

3.5 We at least have a chance of 'complete' recovery in a relatively short time frame which will allow the AMSAT's stature in the eyes of the users, benefactors and the space agencies.

4.6 We reduce the numbers of satellite enthusiasts who will tend to abandon all hopes of AO-10's recovery and switch over to RS satellites as a primary interest.

While (4.5) and (4.6) may seem superficial to the technical purist, in objective terms, it must be remembered that, without the support of these groups, our satellite service would (will) not exist!

Summary

Needless to say, there are many problems to be worked out and Murphy will see to it that major hurdles will present themselves, no matter which alternative is pursued. AMSAT consists of a diverse group of specialists covering a wide range of expertise. Your comments and suggestions are solicited immediately. If you feel your idea has merit, believe the thing may be as wild as you imagine, write it down, but no matter how "wild" the scheme may sound. I cannot promise to reply to every suggestion or comment, but I do promise to study each and every one and present them to the appropriate parties.

73, Ron Dunbar WOPN, 6012 E, Superior Street, Duluth, MN, 55804

UOsl DATA BOOKLET

A new, revised, and enhanced version of the UOsl Data Sheets have been produced by the UOsl team and is now available from AMSAT- Australia as a 40-page booklet on receipt of a donation of $5 to AMSAT- Australia, C/- Box 1234, GPO, Adelaide, SA, 5001.

Contents are as follows:

Section Contents

1 UOsl-OsCAR-9 (UOsl-1) Mission Summary
2 UOsl-OsCAR-11 (UOsl-2) Mission Summary
3 UOsl-OsCAR-9 (UOsl-1) Technical Data Summary
4 UOsl-OsCAR-11 (UOsl-2) Technical Data Summary
5 UOsl Satellites Orbits and Tracking
6 UOsl-OsCAR-9 (UOsl-1) Spacecraft Data Formats
7 UOsl-OsCAR-11 (UOsl-2) Spacecraft Data Formats
8 UOsl-Whole-Orbit-Data (WOD)
9 UOsl Spacecraft Telemetry Calibration Equations
10 UOsl-OsCAR-11 (UOsl-2) Digital Communications Experiment
11 UOsl CCD Camera and DSR Experiments
12 UOsl Ground-Station Equipment

There were 720 copies posted from UOs in the first week of June to all those on the UOsl Mailing Lists. If you are not on the list, please allow for postal delivery before requesting a copy as one may already be in the mail.

PHASE IIIC LAUNCH SCHEDULE

The launch failure of a European Space Agency Ariane-2 rocket on May 30, will have some effect on the schedule for Phase-IIIC launch. AMSAT is manifested to fly the first Ariane-4 launcher this November. However, it is now certain the launch of Phase-IIIC and the V21 mission will be pushed back to at least two months and up to six months or more before launches could resume.

It has been suggested that AMSAT may take advantage of the schedule slack to effect some improvements in the satellite. For example, while improvements in the IHU radiation hardness has been discussed for months (since before the current IHU failure episode unfolded in May) a tight schedule limited efforts that could be brought to bear on the problem. Now, with an apparently slack schedule, several more months, and some serious consideration is being given to rebuilding the IHU with newer, harder memory chips. The memory might also be increased from the present 1K to 4K to enhance AMSAT's stature in the eyes of any satellite enthusiast who would like to see the Mode S transponder efficiency be raised.

de Colin VK5HI
SATELLITE ACTIVITY FOR THE MONTH OF MAY 1986

1. LAUNCHES

The following launching announcements have been received:

1986-033A (19717) Cosmic 1742 May 14 USSR
1986-034A (19718) Cosmic 1743 May 15 USSR
1986-035A (19719) Soyuz TM May 21 USSR
1986-036A (19720) Cosmos 1744 May 21 USSR
1986-037A (19721) Cosmos 1745 May 23 USSR
1986-038A (19722) Cosmos 1746 May 25 USSR
1986-039A (19723) Molniya 3-1 May 27 USSR
1986-040A (19724) Cosmos 1748 May 28 USSR
1986-041A (19725) Cosmos 1747 May 29 USSR

2. RETURNS

During the month 22 objects decayed including the following satellites:

1988-040A (18737) EXOTAT May 14 USSR
1986-041A (18745) COSMOS 1742 May 28 USSR
1986-042A (18738) COSMOS 1746 May 29 USSR
1986-043A (18739) EXOTAT May 14 USSR
1986-044A (18740) COSMOS 1742 May 28 USSR
1986-045A (18741) COSMOS 1746 May 29 USSR
1986-046A (18742) EXOTAT May 14 USSR
1986-047A (18743) COSMOS 1742 May 28 USSR
1986-048A (18744) COSMOS 1746 May 29 USSR
1986-049A (18745) EXOTAT May 14 USSR
1986-050A (18746) COSMOS 1742 May 28 USSR
1986-051A (18747) COSMOS 1746 May 29 USSR
1986-052A (18748) EXOTAT May 14 USSR
1986-053A (18749) COSMOS 1742 May 28 USSR
1986-054A (18750) COSMOS 1746 May 29 USSR

THE TECHNICAL MAILBOX

MEMBERSHIP INCREASE

In the past 12 months, ARRL membership has increased to 139,910, a 10,000 member increase from last year. (The 1985 total was 129,918). As at May 31, 1986 there were 125,281 Full Members, 10,892 Associate Members and 2,638 subscribers.

PACKET LICENSING

Digipeating and mailboxes are not now legal in the UK. The RSGB has been negotiating with the DTI for several months to try to find an early solution to this problem. Initial talks proposed that a frequency or frequencies on 70 cm be allocated to the packet network, but this was not allowed.

The other choices were to go up to the microwave bands or down to two metres. Two metres is very crowded in the UK (the band is only 2 MHz wide), and so this is not a long-term solution to UK packet networking needs. However, establishing a new mode on what would be for most people a new band (24 GHz is the first new band since 70 cm), would be very undesirable. The compromise was to find some bands of low power that would be acceptable for a packet network until the end of the year, at which time the network will move to 24 GHz and the UK. The RSGB has been negotiating with the DTI to move the packet network to 24 GHz.

This month, the Technical Editors are pleased to introduce a new column to the pages of Amateur Radio. This column is a personal effort to provide advice to matters that may have bothered you for some time. In providing such answers, it will benefit us all. If you have a question, it would be safe to say that other readers may be in a similar predicament.

There will be no direct correspondence undertaken and all replies will be published in Amateur Radio. Naturally we reserve the right to refrain from providing a response where the situation dictates.

Keep your queries specific so our replies can be kept to a minimum without the need for diagrams. You can, if you wish, remain anonymous to readers.

We hope to keep you humorously informed.

Now it's up to you. Your feedback may well help to raise topics that could lead to a full-blown technical article written by an expert in that particular field. Your Editor is most adept in applying the technicalknow how, remember the dangers when using such a high energy source. Dear Newham VK4X

No, the rig you obtained from the disposals source is probably not going to catch fire. From your description it appears that the red glow is coming from a device called an electron tube. You will most likely notice that this glass thing has a cap on its top. This is what is termed an anode. You should avoid contact with this as the voltage is much higher than the conventional collector voltage ranging from 6 to 10 volts.

Contact with this anode would reduce our amateurranks by one!

Regarding the purple glow you have also mentioned I don't believe that it is a radio-active source as you postulate but rather it is the glow emanating from a gaseous voltage regulator or mercury rectifier.

It is not good practice to use a half gamma feed on Yagi arrays even when stacking is undertaken.

Your answer lies in providing a balanced feed. Here you have several options. Double gamma, Delta fed dipole, folded dipole or a folded dipole of differing dimensions. All of these will provide a balanced feed to your antenna but the feed impedance is not a matter of your choice. Depending upon your feedline, be it coaxial cable or open line, you can then transform your feed impedance to match your line by means of a network.

Q-bar sections can be used in difficult situations.

Coaxial cable baluns are simple to construct, broadband, and have a low loss if you do it right! Know your cables and its velocity factor and fashion with due care and precision.

Great it works fine until it rains! I! I know you sealed it with silicone rubber and it still looks okay! Well Jim, you selected the wrong type. You should have used a non-toxic (inert) type. Generally speaking, this should be indicated on the tube — anyhow, your nose is a good guide. If you detect a acetic acid smell, you can bet it is the wrong type. You can also obtain a pretty good guide (if you have a microwave oven) by putting some on a plate and placing it in the microwave for two minutes. If you cannot see across the kitchen for smoke it is not the correct type! This test, of course, should be undertaken with extreme care — wives are prone to become a little fussed.

These ugly thinas could be described as high voltage zener or silicon diodes with which you are undoubtedly familiar.

For further information try and obtain an early copy of the ARRL Handbook or contact a nearby Old Timer for advice.

Be careful, we hope to hear from you again.

COMPUTER OPERATED AMATEUR RADIO STATION

Larry "Tree" Tyree N6TR, of Beaverton, Oregon, used what may have been the first completely automated computer operated amateur radio station during a Field Day this year. N6TR made a number of QV contacts using a Z80-based computer and some experimental software which ran a TS-430 transceiver using battery power without the need for any human assistance. The software tunes the receiver, locates the station to call (it only answers QSLs so far) completes that QSO, prints out a record of the contact and continues to scan for a new QSO. N6TR notes that there is still a long way to go before it can come close to matching a human operator!

From the ARRL Letter, July 7, 1986
Quite a lot of interest has been shown lately in new legislation, which has been enacted throughout the world, protecting the rights of utility users of the spectrum. Under the terms of the new act it is illegal to have an unlicensed transceiver or sender. However, the DOC states that ownership of a transceiver by an SWL, who is genuinely studying for their licence, would not be an offence provided that the transmit-side is disabled; ie the final tubes or transistors are disconnected. As well, all transmitting equipment will be aided with an identification label by DOC which must be prominently displayed on, or near, the equipment. Equipment without this appropriate identification will be regarded as illegal, and be confiscated.

PREVENT SALES OF DECOOING EQUIPMENT

To protect their privacy many utility users are scrambling their signals, particularly on VHF/UHF. Sales of scrambling devices are booming, particularly in Europe and the USA, with legislative back-up to prevent sales of decoding equipment to unauthorised Individuals or agencies. This is apparent on HF that digitisation of phone traffic has increased, especially with military or sensitive agencies.

Although there is nothing to stop you listening in to these stations, I do strongly recommend that you keep the traffic to yourself, otherwise you could be in trouble. I further recommend that you desist from forwarding reports to these utility services, and concentrate on international or domestic broadcasters, amateurs or CBers, instead. It is interesting to note that possession of RTTY decoders and other ancillary equipment by SWLs is illegal in many countries. We are indeed fortunate in Australia. Let us not abuse that privilege.

HAPPY ANNIVERSARY

Two Australian DX Clubs recently celebrated their anniversaries: the Southern Cross Club, in Adelaide, had their 13th during July, and DX Australia also celebrated their fourth. The Australian Radio DX Club was 20 in June. Congratulations to all concerned.

I recently canvassed opinions from Divisions and some groups about possible changes in arrangements for examinations. I would be interested in receiving a response from readers, too. It has been suggested that the Institute should become involved in the running of examinations. Instead of the current separate arrangements for each year, we would like to be able to arrange examinations to suit the classes and instructors. We envisage a Division or group with students ready for examination is that able to arrange a date to suit, with the venue being local high or technical schools, or such, arranged by the groups, and a non-amateur supervisor from the local community.

The time could be evenings or Saturday afternoons. The only participation required from the Department would be the provision of sealed examination papers, marking of the answer sheets and distribution of the results.

This system would increase flexibility and provide better service to the new recruits. Hopefully, it would also help to avoid further increases in examination fees, and also reduce provision of sealed technical groups, accredited examining body, to take complete increases in examination fees, and also reduce provision of sealed technical groups, accredited examining body, to take complete

AMSTEREO

Some months ago, I reported Radio NDXE had postponed their opening until later this year. Well, I received news that they are hopeful of commencing on October 15. No frequencies or times are available yet, but they should receive their Continental senders this month and operational tests should be heard. Don’t forget they are planning to be the first station to use AMStereo on shortwave. They will be using the Kahn system, which is different from the Motorola AmStereo on MW in Australia and the States.

Conditions of late have not altered significantly, although there are indications of an improvement. The sunspot count is slowly increasing. I must say that I am surprised that my puny 100 watts and G5RM get into Oregon consistently on the Australian-American Traffic Net, although at strength five. Stations further within the continental USA are unable to hear me, nor are they as strong as Troy K7OVK. Canadians are quite good also. Europeans are particularly conspicuous by their absence on 14 MHz, although 7 MHz propagation to that area is quite good at that time. Signals via the Antarctic path were very disappointing around 0200 UTC this winter, certainly not as good as in previous years.

Well, that is all for September. It is good that Spring is here. We hope that conditions are improving. Until next time, the very best of DX and 73 — Robin VK7RH.
It has been a year since we had a regular EMC column in AR. When Tony Tregale VK2AOU was in the position of EMC Co-ordinator, his monthly column frequently included material supplied by Hans Ruckert VK2AOU. We now have pleasure in introducing Hans as a regular columnist. Although he is not in a position to take over the transmitter as specified by the licence and VK2AOU.

While Tony Tregale 6. High-pass, low-pass and line-filters — what they are and what they can’t do. Ferrite suppressors. 7. Video Recorder (VCR) EMC problems (by DL1BU, honorary technical officer of the DARC). 8. VCR-EMC Standards (by DL9TJ, EMC specialist of the Ministry of Science and Technology). 9. Reported court cases, where the blame was placed where it logically belongs (precedents for future decisions).

It is not the fault of the radio amateur service, that immunity standards already introduced or contemplated in some countries were not in force 50 years ago for broadcast sets and 25 years ago for television sets. This would have protected the unaware non-technical public from purchasing appliances which are incompatible with other services (not only amateur radio). This is a problem of our technological times. Party politics and economics have nothing to do with it nor can they help. Australia is not “a different country,” as far as EMC of services and appliances are concerned. Some conscientious overseas manufacturers have already achieved EMC immunity levels (TVVCR, etc) considerably better than the now legal requirement of three volts/metre in a field strength test-cell.

It has even been found that by selecting the correct earthing points on the chassis (if there is one), the number of components and the production cost could be reduced. By such measures the chassis becomes “cold” for RF, enabling shielding to be effective, as many radio amateurs have known for years.

In spite of these long overdue achievements there are millions of appliances in service, either locally manufactured, imported by dealers or brought in by travellers prior to the adoption of immunity standards. Such devices cause the public and the transmitting services a great deal of trouble, and produce frustration among radio inspectors and radio amateurs.

**EMC REPORTER**

The purchase of equipment or appliances, which cause EMC problems is not in the interest of the Amateur Radio Service nor of the public. If you wish to support this program, cut out or photocopy this part of the page, fill in your particulars, and post to H F Ruckert, 25 Berrille Road, Beverly Hills, NSW. 2209.

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### EMC Register — Receiver Interference

<table>
<thead>
<tr>
<th>Type</th>
<th>Make</th>
<th>Model</th>
<th>Frequencies Affected</th>
</tr>
</thead>
</table>

Which electric/electronic equipment of your own and/or of your neighbours causes interference to your shortwave reception due to excessive (perhaps illegal) radiation?

### EMC Register — Transmitter Effects

<table>
<thead>
<tr>
<th>Type</th>
<th>Make</th>
<th>Model</th>
<th>Affecting Transmitter Frequencies</th>
</tr>
</thead>
</table>

Which electronic/electric equipment of your own and/or of your neighbours is affected by your legally operated transmitter most likely due to lack of immunity/selectivity of the appliance?

---

Hans Ruckert VK2AOU
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209.
With the ALARA Contest fast approaching, I thought it would be a good idea to start getting a little CW practice in, only to discover, when I located my key, several centimetres of dust and a little cobweb! A rather sad confirmation of the fact that I do not use it often enough.

I suppose many of us, on attaining the dizzy heights of the full call after much time and effort, do tend to consign our faithful CW key to a remote corner of the shack, knowing that examination is behind us and there is no longer a compelling need to keep up the practice. We tend to forget that there is a whole new "CW World" out there for us to conquer.

Back to the novice YLs and the ALARA Contest, and of course, the Mrs Florence McKenzie CW Trophy, to be awarded to the novice YL with the highest CW score. (Not necessarily an ALARA member). The minimum score is 50 points, and when you consider that CW contact points are doubled, you have only to contact five ALARA members on CW to be "in the running." Don't be put off by the fact that many of the girls are full call members. They will be more than happy to adjust their speed to yours. Last year, many OMs also were looking for CW ALARA contacts, and no doubt this year will be the same. How about giving yourself a chance to win this unique award?

While on the subject of the ALARA Contest, we would like to thank Ian VK5QX, the Federal Contest Manager, for publicising the event, in June AR. However Ian, these days we do a lot more than just assist the OMs and provide food, etc. (See ALARA Column, August AR).

ACTIVITIES

Activities held in connection with our 11th birthday included:

- VK5 Get-together Luncheon on July 20.
- VK3 Get-together Luncheon on July 27.

Birthday Activity Day on July 26.

The AGM was held on August 26, with a few changes to the Committee.

The Office Bearers are:

- Marilyn Syme VK3DMS — President
- Jennifer Warrington VK3ANW — Secretary/Vice-President
- Val Rickaby VK4VR — Treasurer/Souvenir Custodian
- Margaret Schwerin VK4AOE — Vice-President, Award Custodian/ Historian
- Mavis Stafford VK3KS — Contest Manager
- Martene Perry VK2FKQ — Minute Secretary
- Rob Bronk VN5AOV — Editor
- Bev Hetheron VK6OEL — Librarian
- Helsie Buchanan VK3VAN — Sponsorship Secretary
- Joy Collins VK2EBX — Publicity Officer

State Representatives

- Bobbie O'Hare VK2PXS
- Bron Brown VN5DYF
- Margaret Schwerin VK4AOE
- Meg Box VN5AOV
- Poppy Bradshaw VK6SYF
- Helen Dowd VK7HD

We would like to thank the retiring office bearers, in particular Helsie VK7HD, Marlene VN5SO and Valda VK3DVT for their untiring efforts they put into ALARA's progress, and also wish the office bearers, old and new, a very successful year.

ALARA AWARD

Award number 119 was awarded to Alan G Hughes ZL3KR, on June 11, 1986. Alan's award was endorsed all 3.5 MHz SSB.

CORRECTIONS AND AMENDMENTS

Membership List, July AR

The following call signs were incorrect:

Jan VK2QZ, Chris VK4ASM, Cecily VK40J, Shirley WDSBN.

Omitted from the list were:

- Kirsty VK9NL — joined January 1, 1980
- Bobbie VK6MH — joined December 14, 1976
- Peggy VK6NKU — joined February 15, 1983

Apologies for any inconvenience caused.
Here it is, mid-July and freezing cold at Buronga as I write this column. It is probably the weather that has kept me away from the typewriter, but I would like to finish the story of Morotai, the beetle-shaped island in the Halmaheras, located at two degrees, 20 minutes north, 128 degrees, 25 minutes east.

Whilst on this island, the soldiers of World War Two were continually complaining of the incessant torrential rain, the high humidity, the bully-beef, powdered potatoes, chlorinated water, atebini tablets and the anopholes mosquitoes (the ones that carry malaria — even though I never knew anyone who contracted malaria there due to the intense anti-malaria precautions that were taken by the Army). I have already mentioned the war trials that were held on Morotai and the subsequent punishments carried out at locations which were top-secret. I have forgotten so many things that were part of our existence there, but occasionally I remember them and may write about them again from time-to-time. (Hopefully, I will not be guilty of writing about the same thing twice!).

DROPPING NAMES

There are some names that I still remember from those days, such as Major Cheong, who was editor of the army newspaper Table Taps, when first news of the end of the war was received. Then there was a Lieutenant Taylor, who merits a mention because he was Orderly "room" (hut) Officer, (it was his signature I got a mate to forge on the Ent Twilight, at 2CH Sydney). Barnett was one of our announcers and I believe he was well-known to his 2CH Sydney pre-war listeners for his ability to play the organ. WO Barnett, who was in charge of the army radio station at 9AD, was on the record library prior to the disc going to air. He did this by listening to the disc the day before it was to go to air and placed chalk marks on the place where the advertisement began and ended. When the program went to air, he merely had to lift the pick-up from one chalk mark to the next to delete the advertisements. The army would not appreciate advertising material on its radio station in a war zone with the soldiers having nowhere to buy the products advertised — anyway, who wanted boot polish when no one polished their boots!).

DUMPING PROCESS

With the conclusion of the war in the Pacific, there was a lot of equipment on Morotai and nothing to do with it. This equipment included an American troop ship, the Frederick C Ainsworth, from Brisbane. I did not arrive back in Australia until many months after the end of the Pacific war on the Kanimbla, a Malcolm McEachern Line Passenger Vessel, which, with its maritime broadcasting station 9MI on board, was familiar to pre-war shortwave listeners on the 49 and 25 metre bands. The ship travelled around our coasts.

The equipment on Morotai was dumped as it would have occupied valuable space to bring it back to Australia. Things like staff cars and jeeps were especially manufactured and allotted their swords to General Blarney, masses of swords, guns, etc were distributed to us on the island. This was when I acquired my sword. The only war-like duty it has performed in the intervening years has been thrown through a locked door at my residence at Buronga. I did have other souvenirs of those days, including the famous issue of Table Taps, dated 15 August 1945, and an official photograph of many of us at the Surrender Ceremony, but they have vanished over the years.

Very soon I will write about the trip back to Australia and the things that happened to me in the post-war years in Sydney. Tenet Japan also swayed complimented me on these articles on air, it is very much appreciated.

DROPPING NAMES

Cordless Telephone Buyers Warned Of Illegal Units

A spokesman for the Department of Communications warned buyers of cordless telephones to be on the lookout for illegal units, as there has been reports of unapproved units being imported and sold. These units can cause interference to other radio communications services including radio and television broadcasts.

Use of the unapproved telephone is an offence under the Radiocommunications Act 1983. Substantial penalties including confiscation of the equipment could be imposed.

All cordless telephones used in Australia require both the Department of Communication and Telecom Australia approval, and it should display approval numbers from both organisations along these lines:

- Telecom Authorisation
  - No. C8535/24
- Department of Communications
  - No. DOC 302 0999
  - (or RFM E002 0999)

People who have unknowingly bought an unapproved cordless telephone can seek compensation from the supplier under Section 53 of the Trade Practices Act 1974.

Buyers unsure of the status of the cordless telephone should contact any business office of Telecom Australia or any office of DOC.

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

AMATEUR RADIO, September 1986 - Page 55
Club Corner

WESTERN AND NORTHERN SUBURBS ARC

The 7th Transport Squadron of the Army Reserve will be attending the monthly meeting on September 13, 1986. They will be holding the annual Hamfest, between 10 am and 4.30 pm.

The October meeting will see an interesting talk about VHF/UHF Propagation using aircraft equipment, presented by Doug MacArthur, VK3UM, a Technical Editor of Amateur Radio and an exponent of this form of propagation.

All visitors, friends and members are invited to attend these events. Visitors are made most welcome.

BALLARAT AMATEUR RADIO GROUP

On November 1 and 2, 1986, the Ballarat Amateur Radio Group will again be conducting a Hamvention at the Sebastopol Football Clubrooms.

Readers of Amateur Radio are cordially invited to take part in the activities which will be held over the weekend.

This year’s Hamvention will be different to previous years. The theme for the event will be Amateur Satellites with a guest speaker from interstate talking on the Saturday night.

A couple of new events, like a high speed CW contest, will be part of the event.

Readers interested in taking part in the Hamvention are requested to complete the circular which will be an insert in a later AR, or contact the Group at Box 216E, Ballarat East, Vic. 3350.

Contributed by Murray Finishead VK3AAI

SWAN HILL DISTRICT RADIO CLUB

The two-metre repeater of the Swan Hill District Radio Club, VK3RSH, became operative in 1975. Originally it was decided to adopt the common receiver, transmitter, and antenna system with associated cavities, as described in ARRL publications.

The electronics system was home-brewed, mainly from kits available at the time. The 146.900 MHz transmitter was capable of 25 watts output and the receiver was capable of good performance. However, receiver sensitivity was limited by an over present desensing problem caused by the inability of the cavities to provide adequate isolation.

VK3RSH was originally located at the home of VK3BM, within the city boundaries of Swan Hill. Even with an antenna height of 36 metres, mobile operating range was limited to about 25 kilometres, so in 1984, for various reasons, it was decided to relocate the repeater to a clear area, five kilometres from town, with the antenna elevation remaining similar to the original location.

The collinear antenna was replaced by an omnidirectional array of four phased dipole antennas.

No AC power was available so a solar cell bank was installed. Two bunkers were constructed — one for batteries and the other housing the electronic equipment, plus the six cavities. The receiver signal-to-noise ratio was improved and the mute section was updated. But, it was all to no avail — receiver de-sensing caused by the Inability of the cavities to provide adequate isolation.

VK3RSH currently has a slight receive function advantage, exactly 56 dB over the transmitter, with reduced power consumption should be considered.

As random noise output from the transmitter has no effect on receiver performance, an audio peak limiter is employed to maintain a satisfactory deviation index.

The undulating terrain of the Victorian Mallee and adjacent New South Wales Riverina has no high vantage points. Mobile units show a reliable omni-directional field range of 50 kilometres with better results under favourable conditions.

Base stations at Robinvale, 125 kilometres distant, regularly access the repeater. Outside solar cell performance is highly variable with daily and seasonal fluctuations in light intensity. Absolute maximum charging rates is 2.4 amps. Under cloudy conditions, even in midsummer, output can drop to a maximum of .75 amps. The receiver and control circuitry current consumption is .35 amperes. Internal battery leakage is about .1 amperes, so careful monitoring of the battery charge level will be necessary.

A new identification system, using CMOS technology, has been installed and perhaps a new receiver, with reduced power consumption should be considered.

The Swan Hill and District Radio Club hope that their two-metre repeater installation is now capable of stable operation and improved performance for the future.

The Major Mitchell Award, celebrating Swan Hill’s 150th Anniversary, is available to those amateur stations which fulfill the necessary requirements, see page 42, April AR, and contacts via the repeater involving Swan Hill Club members are eligible for the Award.

Written by Doug Lott VK3DZX and contributed by Jeff Bebee VK3DUL, Secretary, SHDRC

SWAN HILL DISTRICT RC

When the Swan Hill District Radio Club Repeater, VK3RSH, is now operational from its new location and the Club Repeater Officer, Doug VK3DZX, presented a full report of its modifications to the AGM in early June.

Doug VK3DI, Immediate Past President, commended Doug and those involved with the repeater as well as those who were involved in Club activities during the past year. Rex VK30I; Immediate Past President, VK3DI, continues as President for 1986/87 and Jeff VK3DUJ, continues as Secretary.

Club meetings are held on the first Thursday of the month at the Swan Hill Technical School and visiting amateurs and SWLs are always welcome. Contributed by Allan Fountain VK3YAH, Publicity Officer, SHDRC.

The antenna set-up showing the discone under the G0144A.

The solar panel mounted on the tower.

Bunkers In which the repeater and batteries are housed.

are then necessary regarding cable orientation except for the short length from the receive cavity to the receiver input.

The feature of this system is that the repeater has a slight receive function advantage, exactly 56 dB over the opposite situation existing with the common receive/transmit antenna previously in use. There is no receiver desensing.

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Club History Project Keith Alder VK2AXN
Council Liaison Jeff Page VK2BQ
Repeater Gareth Davey VK2ANF
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Emergenc

Meetings are held on the fourth Tuesday of each month at the Asquith Sports Club Hall, Old Berowra Rd d. Hornsby.

Club Nets are held on Mondays, 1000 UTC, 28.370 MHz (sometimes on the alternative frequencies of 3.615 and 147.250 MHz), watch for VK2AP. All welcome to join in! Information supplied by David Priday VK2CDZ, Secretary, HADARC.

DEVIL NEWS — from the North West
The last meeting of the Club saw 23 members and two visitors present, with apologies from VK7s KY, AR and OL. Guests were Barry VK7FR and Joe VK7JG. Joe was representing State Council, being Guest Speaker for their meeting.

During the course of the evening, Joe advised that instead of State Council paying for repeaters VK7RNW, VK7TRA, etc, each Branch will be responsible for their own local repeaters. This matter will be discussed further at the next State Meeting.

Noel VK7EG, requested the AGM month be changed and referred to the relevant constitution reference — this matter is now to go to State as a Request of Change.

Bruce, the Treasurer reported that the financial position is good.

Andrew is having success with repeater VK7RAD and has had it running on test at his QTH. It looks as though it will not be too long before it is united with the mountain top.

The new room at the High School is still progressing well and is becoming more homely with a donation of carpet from Don VK7DP and furniture from the VK7WW.

The News Co-ordinator requests to hear from people who are willing to do relays for him when the North West has news — please ring Arthur if you have a story to give.

There was considerable discussion when Ron VK7RN suggested that the broadcasts were not always as loud as they have been in the past.

Joe VK7JG, spoke about Federal News and advised that the Federal Office has opened a Bulletin Board using a computer modern and suitable program for receiving news. He also spoke about examinations and the 1988 rule change. These will be discussed further at the next meeting.

Those of you who read Pounding Brass regularly will recall the reason for suggesting the CW Sprint was that the established contests are too long and have too few CW participants to be really exciting. An hour and a half should not be enough time to work all of the participating stations, so the emphasis will be on operating speed.

There might be some inclination for slower operators to feel disadvantaged — don't! I am sure that all participants, being gentlemen knights (and of course ladies) of the key, will follow the Golden Rule of speed and slow down to work slower operators. Besides — what better incentive to get your speed up?

Another subject, I promised to report on the club's visit to the OTC Coastal Radio Station, at McLaren Vale (Adelaide Radio, for SWLs). Well, I am going to beg off for another month because the manager of the station, FR VK5YK, is coming to speak to the club in a couple of weeks and I want to check some facts and figures with him. It was a real eye-opener, especially to see the transmitter on display.

You may recall discussion of the K P Thomas Autormorse Mechanical Key in this column in recent months. Well, at the last WIA Buy and Sell I bought the proud owner of one of it. It is a heavy weight key — about two kilograms — and quite complex. At a guess it would have around 100 actual parts, and there are 20 screws provided for adjusting the movement of the dash paddle. The paddle has two lengths, because after all, the basic principle is to provide the correct length of the arm and the weight at the end of it. The paddle releases a spring pendulum and the speed of oscillation is a function of the length of the arm and the weight at the end of it. The dot lever has two. In addition to the position of the weights, you can adjust the spacing between the contacts, the position of resting and limiting stops, and the tension on the paddle.

Once it is going (about three hours' work hooked up to a keyer) it is simply a matter of matching the timing and weighting of the dots and dashes. Having done that, and bearing in mind that the slowest speed possible appears to be around 18 WPM, it is not something that can be changed quickly, it is not something that can be changed quickly.

Perhaps it is a matter of practice, and/or adjustment, but I find the auto-dash facility on the Autormorse pretty crude in terms of effort required to generate a couple of dots and dashes. But I have played with it enough to see that one can get used to it in a way. It is working very well. The dot lever has two. In addition to the position of the weights, you can adjust the spacing between the contacts, the position of resting and limiting stops, and the tension on the paddle.

It seems that people have been filling the space for this month. Don't forget about the Sprint — get in some practice while you can because I think that this year's event will be well packed on my shelf!

CB VIOLENCE
An 11-metre CB transceiver in La Habra, California, has been shot to death by an armed intruder.

Dennis Carrico was talking on his CB set after midnight when he was not alone any more. Carrico turned and saw a stranger with a gun standing over him. The gunman ordered him to turn off the CB and move away from it. Carrico obeyed, but the gunwielder shot him three times and quietly left.

Carrico was not harmed but his transceiver was destroyed. Police theorise that the attack was in retaliation for TVI.
IPS TRAINING COURSES
For those amateurs interested, IPS are running training courses on a one day basis. The course consists of three lectures covering various subjects. Generally the course is aimed at HF communications, but the presentation can be tailored to suit the audience.
Courses are normally conducted from 9.00 am to 3.00 pm and are presented in Sydney during September each year.
Cost of the course is $55 and further information may be obtained from PO Box 702, Darlinghurst, NSW. 2010 or phone (02) 269 8555.

FREQUENCY MEASUREMENT
Associated Calibration Laboratories Pty Ltd, recently obtained certification as National Association of Testing Authorities (NATA) approved laboratory for frequency measurement. This is in addition to their current NATA certification in various areas of acoustic calibrations and surveys.
A unique feature of the reference frequency system is that it is phase locked to Omega VLF and can certify frequency counters, time interval meters and the frequency characteristics of signal sources.

ACTIVE ANTENNA MATCHER FOR SWLs
The MFJ-959, made by MFJ Enterprises of Mississippi, USA, and distributed by GFS Electronic Imports, is designed to meet the needs of SWLs.
It incorporates an antenna matching unit which covers 1.8 to 30 MHz, a 20 dB adjustable gain preamplifier and two two-position coaxial switches, plus a mode selector.
Most shortwave listeners are faced with the problem of not being able to physically accommodate an antenna for each band they are interested in listening to. Alternatively, it is difficult to obtain a suitable broadband antenna which performs adequately.
With the MFJ-959, an SWL can now use a simple random length of wire, which may be of any length that suits the SWL's real estate, and still have the confidence that the transmission will be heard. The MFJ-959 should be a universal solution for all SWL who require an SWL receiver.

DIGITISED METEOR SCATTER
A United States defence contractor has developed a system which combines digitised speech and meteor scatter. It claims the system could work around the clock, and exchange disrupted normal communications which rely on ionospheric propagation, and is immune to jamming or interception.
A demonstration showed the ability to send a one-way voice signal beyond the horizon by refracting the signal off ionised meteor trails. Meteor scatter communication was first explored in the 1950s for non-voice data transmissions. As many as 200 million meteors hit the Earth's atmosphere every day leaving ionised trails for a few hundred milliseconds and two seconds.
The experiment used greatly compressed digitised voice signals in bursts, and the voice was synthesized at the receiving end using a computer.
COMING EVENTS
The next Divisional Seminar will be held on Saturday, September 13, at Amateur Radio House. Starting time will be 10 am. There are four speakers.

The Divisional Broadcasts will have further details.

Following the success of the Anniversary Dinner there will be another one held on Saturday, October 11, at last years venue. Bookings should be made through the Divisional Office. Office hours are from 11 am to 2 pm weekdays, phone (02) 689 2417.

A reminder that JOTA weekend is October 18 and 19.

The South-West Zone Field Day weekend is scheduled to be held towards the end of October in the Wagga region. More details closer to the event.

Forthcoming WICEN exercises include the Batemans Bay Car Rally on the South Coast over the weekend of September 27/28. The Outward Bound Canoe Classic will be held again this year on the Hawkesbury River during the weekend of October 18/19.

DISPOSAL ITEMS
A new list of surplus items available for purchase from the Divisional Office may be obtained if you send a SAE.

The Divisional Council receives requests from time to time to assist in the disposal of radio items in a deceased amateur's estate. What often happens is that those having to dispose of the equipment have little or no radio knowledge.

Recently, the Division received a request to assist with two estates and Council has decided to list the equipment in the Hamadioz if this magazine and to ask those interested to indicate their interest by submitting tenders for same. The replies are to come back via the Divisional Office, where they will be co-ordinated and returned to the families for their consideration.

REMEMBRANCE DAY LOG
Have you sent your log in yet? It must be in before September 26. See page 29, July AR.

Clubs
The next conference is to be held on Sunday, November 2. Your agenda items close by September 12, at the Divisional Office. Do you still have to respond to the information on insurance? If so, please acknowledge and return your comments.

REPEATER NOTES
Oxley Region ARC is to establish a Packet (7575) Repeater and a UHF system (8525) at their VKR2P7 site.

The Central Coast ARC also wish to establish a

Five-Eighth Wave
The Jubilee 150 Committee have been delighted with the number of applications for the J-150 Award. After all, it is no use having an award if one achieves it, however, this has created a problem with the publishing of the list of achievers, we are getting so many each month that they are taking up most of this column, so to ease the situation it has been decided to publish only the first certificate awarded to each person, in future.

This includes those gained under the VI prefix (unless it is the first certificate with any call sign).

For those who did it the hard way (under the original rules), or those who still want to do it that way, there is a very nice endorsement "seal" available. Here are the latest 'first-timers'.

240 VK5BEV 288 WA5AYTV 333 VK2ELE
241 VK5PKX 290 VK2GAI 334 VK4BKW
242 VK5BRS 291 VK2FIE 336 KASKKN
243 VK5IFS 292 NTWMB 337 NEVFX
245 VK5DSC 293 KOPGU 338 SMBW
247 VK5STP 294 N7BL 340 NGBL
250 VK5DPM 295 N5PM 342 SBKZ
251 VK5SPN 296 HB9DAY/W 342 VK4AMB
254 VK5CJH 297 KATYXC 345 VJU
256 VK5CNF 298 NSITC 346 ZL2AW
257 VK5SB 299 VK6ED 347 VK7NAX
258 VK5CV 300 KSBC 348 WA5AR
260 VK6KMP/5 301 Z51FW 349 VK5BHP
264 VK6KQ 321 VK5SU

SADLY MISSED
When Chris Whitehorn VK5PN, told me of the passing of Peter Barlow VK5NPC, over the phone, I was very glad that he had prefaced it with "are you sitting down?" Chris, with his usual forethought had realised that the news would come as a shock to me, as he had heard me giving Peter a segment for the Broadcast only hours earlier, and wanted to tell me personally before I heard it over the air, for which I was grateful. By the time Chris had contacted me it had already been arranged that Graham VK5AGR, would collect the broadcast gear from Peter's home and that Chris would edit the broadcast to spare those who knew, the pain of hearing Peter's voice or references to him. Thank you to you both, and to Bill VK5AWM, who agreed to act as Courier, for the magnificent way in which you stepped into the breach.

I sincerely hope that as you are reading this, my next remark will be quite unnecessary, but as I write it we are in urgent need of a new Broadcast Producer. Chris offered to take it on until someone else could be found, but Chris is also involved in other things, and does not want it to be for too long. A period we do not already have someone permanent, please give it some serious thought. Chris has already volunteered to give all the assistance he can. If, on the other hand, we already have a volunteer but you would still like to help in some way, you are looking for relay operators on several bands, in particular, the two 10 metre bands.

Either way, Chris or I would love to hear from you.

DIARY DATES
Tuesday, September 23 — Display of Members Home Brew Equipment. (Don't forget that there are prizes and certificates awarded for the best entries, so bring your home-brew gear along, it might be worth your while).

WIA MEMBERSHIP STATISTICS
As at June 30, 1986, the Wireless Institute of Australia had 8225 financial members. Of these, 163 are Associates, 1047 pensioners, 136 families, 101 students and 53 life members.

There have been 319 people who have not renewed their membership for 1986. Why? The WIA is concerned and would like to know the reasons why members do not renew.

Offset against this loss has been the recruitment of 338 new members. Not a very spectacular growth rate. When talking with fellow Australian amateurs discuss the Institute, find out if they are members, or would like to become members. If the latter, please pass the information on to your Division or the Federal Office and application forms and information on the WIA will be sent.

Many amateurs out there are just waiting to be asked to join the WIA, as they themselves are unsure how to go about it. You can assist them and yourself as well, as the greater the membership, the greater the spread of the financial burden.

Also, if any other amateurs have constructive criticism of the WIA we would like to know. The WIA is not perfect, but often very hard and it is only from feedback from the members that they can be sure that they are truly representing your point of view.

Remember, the WIA only exists for radio amateurs and because of amateur radio. It can only be what you make it!

Jennifer Warrington VK5SANW
S9 Albert Street, Clarence Gardens, SA. 5039

OSP
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Remember, the WIA only exists for radio amateurs and because of amateur radio. It can only be what you make it!

AMATEUR RADIO, September 1986 - Page 59
I would like to take this opportunity to thank the people involved for the speedier delivery of Amateur Radio magazine to members like myself in country areas.

The introduction of the plastic envelope ensures that the magazine always arrives in mint condition.

Thanks once again, cheers and 73.

FURTHER THE CAUSE OF AMATEUR RADIO

I have read with interest the comments by correspondents in your magazine regarding the DXpedition Paper presented at the North VK6H, 792 Andover Way, Karratha, WA. 6714.

The following letter was written to the NZART magazine Break In response to recent correspondence. Since Ian is referring just as much to the WIA as the NZART in his comments, it is appropriate that it should also be published in Amateur Radio.—Ed.

CONTACT PLEASE

We are interested in corresponding with one or two amateurs who are interested in two metres H&F (with particular interest in DX; eg Sporadic E, meteor scatter, aurora, etc.

We have both been licensed since August 1983, and we have spent many long days (and nights) monitoring for DX. We enjoy the challenge of working long distances on VHF.

One day, when monitoring the band for Sporadic E we were discussing the theory behind this mode of propagation. After reading one or two articles on the subject, it occurred to us that all the information we had available was centred around Western Europe. It was this realisation which gave us the idea of starting a packet radio system and we have spent many long days (and nights) trying to get it up and working properly.

Let us know if you would be interested in packet radio matters.

Your faithfully,

Linda and Phil Stubbs
G6WYY and G6WYZ.

The Amateur Radio Society of the United Kingdom

52. LILLIBURLERO

This page published in 1986 becomes a daily popular and probably last time in my life the type "The Australian Multi-User".

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

FUTURE SHOCK?

The contribution by Alan VK4SS, in the July AR, Prophecy from the Past (p 20), was fascinating to read— and as I read it, my flesh begun to creep and the hairs on the back of my neck (about all that is left now) the long-expected "black box" (the so-called "100 kW" of ERP is not so fanciful with maximum power driving a high gain array. As Alan says, "sealed" equipment has been proposed — it was a reality in Aus. in 1923.

Even the concealed antenna system may come to pass; amateurs all over the world are fighting for their existence against local-government bureaucrats who are now roused by the propaganda of the "anti-amateur" press. Even the "100 kW" of ERP is not so fanciful with maximum power driving a high gain array. As Alan says, "sealed" equipment has been proposed — it was a reality in Aus. in 1923.

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niques: specifically, concentration (ashing of solids and evaporation or filtration of liquids) and counting in a lead castle with digital scales. Even when a total count is obtained, interpretation of its biological significance will require gamma-spectrometry to determine the mix of isotopes represented.

Remember that Chernobyl, while very large for a peacetime accident, was small in comparison with the world’s atmospheric weapons testing of the 1950s and early 60s, which required such techniques to trace the stratospheric trans-equatorial fallout. Even in Western Europe, the trans-equatorial fallout would be hard to detect with an unshielded G-M counter of the sort that an amateur could build, or afford to buy.

73,
Jim Lloyd VK1JL,
18 Pera Place,
Red Hill, ACT. 2603.

DISCUSSION PAPER
I would like to present my personal views to the Discussion paper.

I agree that new members to the amateur radio fraternity could be attracted from the existing computer hobbyist groups, however, I do not see a reduction in licensing standards. My suggestions for a Digital Licence (HF) would be:

- Novice Level — as for the present novice regulations, but with questions on digital transmission and insert questions on digital transmissions. This would allow successful candidates to operate CW and Digital Transmissions in designated portions of the Novice Bands.

For a Digital Licence I would suggest:

- Limited Level — as for the present limited regulations, but with digital questions on speech transmission and insert questions on digital transmission. This would allow successful candidates to operate digital transmission in the designated portions of VHF and above.

Present holders of Novice licences should be granted Digital Transmission privileges.

The present examination papers for Novice and Limited could be structured to allow for candidates to sit:

- a) Novice
- b) (HF) Digital
- c) Combination of a) and b) and
- d) (VHF) Digital

I look forward to reading further views on the Discussion Paper in AR.

73,
Rod Adams VK3CB0,
c/o Post Office,
Klewa, Vic. 3691.

R Davey VK6ARD,
12 Lillian Street,
Cottesloe, WA. 6011.

Thank you for participating and contributing to AR. OK, I will find out what you are planning on doing for this issue, beginning this month, a new column entitled Technical Mailbox. One of the Technical Editors felt there was need for this type of column within the magazine and you have confirmed it. Your ideas will be passed on to him for a reply next month.

HOMEBREW COST TO RISE
On July 1, a 20 percent sales tax on tube and hollow square-section aluminium came into force. Many of us use the former to make elements in home-brew antennas and a few use the latter for boxes. However, the tax does not apply to extruded or drawn aluminium products in "T" or "U" shapes.
Obituaries

JIM BOISSETT VK2ETU (VK2NBY)
Jim passed away on May 13, 1986. Jim was known to many as a "Radar" possibly due to his training during WWII as a Radar Technician. This gave Jim a grounding in electronics. He was a foundation member of the Western Suburbs Radio Club, and held the position of President for some time. He will be sadly missed by the Club and by his many amateur friends.

Peter Barlow VK5NPN
Amateurs and shortwave listeners around the world will be saddened to hear of the passing of Peter Barlow VK5NPN on June 26, 1985. Peter was an optimistic character who revelled in new challenges to test his capabilities. For over a year now, Peter has been producing the WIA Sunday Morning Broadcasts in Sydney. Under the "front-man" for the WIA, he dedicated a lot of time each week to making sure that every program was a good one and he continued to attract us at the same rate of program by saying what ever you do, be good at it. Cyril was a quiet and gentle person and with me, will always be proud and honoured to be known as a friend of Peter Barlow.

Cyril was a life member of the Ipswich and District Radio Club. He had that wonderful satisfaction that many would be proud of, in that two of his sons, Alan VK7RE and Peter VK4PV and his daughter-in-law, Anne VK4MUM, are amateurs that can carry on the great tradition of amateur radio.

Cyril and Mayne recently celebrated their Diamond Wedding — a most memorable and enjoyable occasion. Deepest sympathy is extended to Cyril's family.

DON WILSON VK2AES
The strains of The Teddy Bears' Picnic heralded to many a pre-war medium-wave listener that another relaxing Sunday morning session of records from Teralba was about to begin.

The call of VK2AES, on SSB in recent years meant a chance for a pleasant OSO to local and DX calls alike. Both now are only memories as Don Wilson passed away on June 6, following a brief, but overwhelming illness that even his strong spirit could not overcome.

Born in 1913 in West Wallsend, one of a family of seven, Don Davidson Wilson was brought up in the staunch traditions of the coal mines, which gave the area its rich culture and jobs. Like so many more young men of that era, he became a miner when he left school, but his career was shortened by an accident when, at 19 he lost a leg on the rope-way at the pit bottom.

It could have been this accident that spurred him on to study for a position away from the heavy manual work. So with radio in its infancy he took the challenge and made the grade. He soon gained technical qualifications which would assure him of stable employment.

Don married Lillian in 1935, and the couple settled in the then thriving mining village of Teralba. Their house in Blair Street was to be his home until his untimely death.

Don was licensed in 1936 as VK2AES, and he became interested in DX as well as local broadcasting.

His hobbies took him through to the Broadcaster Operator's Licence in 1940. When his equipment was confiscated and his licence suspended because of the state of emergency declared shortly afterwards, Don was shocked. This was the turning point in his career and he did not become really active again until much later.

His radio and electrical business in nearby Boolaroo took up most of his time and he had been in the same shop for 34 years when he retired in 1977. Don was active in many local organisations. He held an executive position in the Boolaroo Bowling Club and he was a keen fisherman. The packed chapel at his funeral showed just how much he was respected in the local community.

Don is survived by his wife Lillian, and children Joan, Don, John and their families. As well, he leaves a big circle of radio amateurs that can carry on the great tradition of amateur radio.

Deepest sympathy is extended to Cyril's family.

Norman Hart VK4KO

W.I.A. WINDBREAKERS

— Warm and Machine Washable
— Navy Blue with 8 cm (3”) WIA Badge

CHANCE OF LANDMARK LOCATION

ACE Radio, who have traded in Victoria Road, Manly Vale since 1934, have been sold. The owners re-located the business to Manly Vale in July.

TEGA ELECTRONICS

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Terry and Gary (VK3ZHP)

W.I.A. WINDBREAKERS

— Sizes 12-24

INQUIRE NOW AT YOUR DIVISIONAL BOOKSHOP.
Many new computer owners may find it difficult to modify computer programs.

John Wickham's Random Morse program for the Vic-20 computer (AR May 1986), was very good, however many new computer owners will find that it is not "easy to modify for other computers." Also, not being able to vary the speed of the CW will be a problem for those who wish to practice. This was discussed in the program's "brush up on their CW." With this in mind, I offer this program written for the Commodore 64, which is similar in its aims of generating Random Morse, but allows variations in the speed.

When RUN, the program randomly generates 250 characters which is the approximate length of the 10 WPM DOC test. For the novice test, which is about 125 characters, alter the 250 in line 270.

This program is adapted from my full Morse Trainer Program which was published in Amateur Radio in September 1985. This program features sending and receiving of plain text, random characters, variable spacing, etc.

#### Solar Geophysical Summary

Solar activity was low in May, except on the fourth, when a small M-class flare occurred around 0939 UTC. During the second half of the month, a region on the sun appeared likely to produce minor storm conditions.

**MAY**

**GEOMAGNETIC**

May was another quiet month with the exception of the extended disturbance at the start of the month. The first part of this disturbance appears to have been associated with the disappearance of a solar filament several days earlier — the second part was associated with the passage over the solar disk of a coronal hole.

#### QSP

This is not a contradiction in terms, or a Clayton's joke. This article is for those who homebrew (build or invent) and do not homebrew (make their own radio equipment).

According to the May 1986 edition of Elements some 75 to 80 percent of up-market Australian wines use a foil wine cap consisting of tin and lead (just like moonshine — you can start to see the association). The inlets and outlets are placed, like a thick sandwich or pastry, between two strips of tin and rolled together under pressure.

Because of the qualities of both metals, this is enough to form a strong and lasting bond.

Now that you are pointed in the right direction, it is up to some enterprising amateur (who can convince his YFYLF that large purchases of wine are required for his radio experiments) to find a way of using old wine caps as a solder substitute! Good luck!
Hamads

YAESU POWER SUPPLY: VALVE: with Icom 720A. Will pay costs, reverse charge call. Ash CRO.

KENWOOD Flashwick, Plaza. ACT.

Vic. Willis Trading Co, Perth, WA. Electronic Components, electronics, Lane Cove, NSW. Truscott Electronics, Croydon, only to private articles not being resold for merchandising paper.

S: TET HB34D or similar. TH5, ICOM deemed to be in the general electronics retail and wholesale trade. Agreements at: Geoff Wood Elec-

Macken Street, Oakley). Agencies at: Geoff Wood Elec-

KARNA EVAP, Melbourne. VIC 3162. at the latest by 9am, 22nd September 1986.

All copy for inclusion in the November 1986 issue of Amateur Radio, including Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale trade should be certified as referring only to private articles not being resold for merchandising purposes.

for data & price list indexes * Copy in typescript, or block letters — double-spaced to

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TRADE ADS

AMIDON FERROMAGNETIC COVERS: Large range for all receiver & Transmitting Applications. For data & list price send 105x220mm SASE to: RF & US IMPORTS, Box 157, 2253 Qld Times (note inquiries at office . 11 Macken Street, Oakley). Agencies at: Geoff Wood Elec-

Electrode, Lane Cove, NSW. Truscott Electronics, Croydon, Vic, Willis Trading Co, Perh, WA. Electronic Components, Fishwick, Plaza, ACT.

WANTED — ACT

MONOBANDER YAGI: or tribander Yagi for 20 metres. Keith VK1KG. Ph:(062) 31 7438.

WANTED — NSW

ICOM 720A, 730, 735, 740, 745 HF TCFR: & power supply. Prices to Ph:(049) 77 1570 evenings.

TRIBANDER HY-GAIN TH5, & TET HB34D or similar Paul VKAUL. Ph:(02) 528 9490.

YAESU SYNTHESISED SCANNING EXTENSIVE VFO: FV-301 DM with all cables & manual to integrate with YAESU FT-001D. Mint to very fine condition. John VK2AEG, QTHR.

WANTED — VIC

CIRCUIT DIAGRAM: for 10 & 15 metre preamp for use with icom 720A. Will pay costs, reverse charge call. Ash CRO.

WANTED — QLD

KENWOOD TS-520; DGS mic & manuals. Good working order. Ph:(097) 404 6855. QTHR. Ph:(07) 396 3521.

MICROWAVE MODULES: 70 cm amplifier with circuit. $240. Kevin. Ph:(07) 377 4286 BH or (07) 201 3006 AH.

FOR SALE — WA

KENWOOD TS120; AT120; VF0120; MB10C; MC35: owners Handbook & service manual for all. Orip cartons used sparingly, mint condition. $650 complete. Century 21 rx, 0-30 MHz, solid state. Analog dial with handbook, $150. Dinklely Graham VK5AMG, QTHR. Ph:(02) 542 3508 during September only. After September phone (095) 35 2490.

FOR SALE — TAS


ESTATE OF LATE VK3GY: FT272DR2a fm trx fm scanning unit. $220. TL2050 25 linear amp. $200. Home brew rf mixer, $200. RF & US IMPORTS, Box 157, 2253 Qld Times (note inquiries at office . 11 Macken Street, Oakley). Agencies at: Geoff Wood Elec-

KENWOOD TS-520; DGS mic & manuals. Good working order. Ph:(097) 404 6855. QTHR. Ph:(07) 396 3521.

FOR SALE — QLD

KENWOOD TS830S 2m linear amp. $200. Home-brew PS & power supply. $495. Or exchange for 2 metre hand-held. VK3RM, c/- Eliza Lodge, 347 Nepean Highway, Frankston, Vic. 3195.

FOR SALE — VIC


DRAKE 2-B RX: Q-multiplier, speaker, monitor CRO, spare valves, crystals, handbooks, $230. Details full extent. VK3QI. Ph:(03) 306 4040 AH.

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45 Affordable Watts!

**TM-201B/401B**

Super-compact mobile transceivers

The TM-201B boasts a powerful 45 watts output, easy-to-operate front panel controls, and ultra-compact size. The GaAsFET receiver front end provides high sensitivity and wide dynamic range. Receive and transmit characteristics are tailored for minimum distortion and excellent audio quality. Both the TM-201B and the TM-401B are supplied with a high-quality external speaker, hand microphone and mounting bracket.

- 45 watt output, with Hi/Lo power switch (TM-401B has 25 watts output >5 W low
- Dual digital VFOs
- TM-201B covers 144-148 MHz, TM-401B covers 440-450 MHz
- 5 memories plus "COM" channel, with lithium battery back up

- Programmable, multi-function scanning
- High quality external speaker supplied
- Audible beeper confirms operation

Optional accessories:

- PS-430 power supply
- 1 U-3 or 1 U-3A two frequency tone encoder
- FC-10 frequency controller
- MC-55 55-bpm mobile microphone
- SP-40 compact mobile speaker

- SP-50 deluxe mobile speaker
- SW-100A/B SWR/power meters
- SW-200A/B SWR/power meters
- SWT-1 2 m antenna tuner
- SW7-70 2 m antenna tuner
- PG-2K extra DC cable
- PG-3A DC line noise filter
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Optional FC-10 frequency controller

Convenient control keys for frequency UP/DOWN, MH7 shift, VFO A/B, and MR (memory recall or Change memory channel)

More information on the TM-201B/401B is available from authorized dealers.
As this issue went to press, the poor old Aussie dollar reached an all-time low. Less than 60c US — and worse for amateurs — less than 90 Yen. DSE puts value back into your dollar... look at these prices. They'll never be this low again — so if you want the latest in amateur bargains, buy now and save!
Construct a **DIRECT CONVERSION RECEIVER** for 80m
**1986 REMEMBRANCE DAY ADDRESS**
**ANTENNA ARRAYS** Conclusion
**AMATEUR RADIO ENGINEERING PROJECT** Part 2
**DESIGN of a BAND-PASS FILTER** for 2m
**SMALL SIGNAL BJT AMPLIFIERS**
2m Hand-held Transceiver Yaesu FT-209R
Compact, yet one of the most sophisticated units around! Key in frequency selection and function pad • LCD frequency and function display • memory • manual, programmable scanning with skip and priority scanning. Freq. range 144.00-148.00 MHz. Switchable hi/low power. (1.8/3W).
Power output depends on battery. Choose optional PNB-3 (2.7W) or PNB-4 (3.7W).

WHILE STOCKS LAST! WAS $439 $399 NOW

Save $280 on the ultimate in 2m versatility
Yaesu's FT290: go-anywhere, do-anything 2m workhorse. It's no tuning hassles Easy to assemble... set up in no time. Compact, yet one of the most sophisticated units around!

Last chance for Yaesu's mobile antenna system...
Because of the plunging Aussie $, and an increase in import duty, the cost of the Yaesu mobile antenna system has gone through the roof. So if you are even thinking about going mobile on HF, grab some of these slashed in price to clear-while stocks last.
And if you already have the base & stub, you'll need the resonators some day. Here's your chance. But don't wait!
Note: strictly limited stock — not all parts are in all stores!

RSM-2 Gutter Mount. Deluxe gutter gripper, complete with quality co-ax and PL259 plug. Cat D-4100
Was $50.55 NOW $29
RSM-2 Stub. Not just the base for the resonators — it's also a quarter wave on 2m. Screws into RSM-2 mount. Cat D-4102
Was $21.95 NOW $13

hf Resonators: Just add on the band you want.
80m (RSL7A) Cat D-4112
Was $54.95 NOW $34
40m (RSL7A) Cat D-4110
Was $60.45 NOW $29
20m (RSL14) Cat D-4114
Was $60.45 NOW $29
15m (RSL21) Cat D-4116
Was $37.95 NOW $25
10m (RSL28) Cat D-4118
Was $37.95 NOW $24.95

40-Ch. UHF Transceiver
Enter the exciting world of HAM radio and save $$! Get your official order for 5 units and save $50 per unitl

UHF Yagi — 11dB gain
Great investment for 70cm enthusiasts. This 13-element Yagi covers 430-440MHz band with an impressive 11dB gain.

As described in June '86 EA
Cat K-6305

40-Ch. UHF Transceiver
Enter the exciting world of HAM radio and save $$! Get your official order for 5 units and save $50 per unit!

HF Transceiver kit:
Yes, we've slashed the price on our popular HF transceiver kit. Can cover any single 500Hz segment within 2 to 30MHz (80m version supplied). Covers CW, LSB, USB modes. As described in Oct '85 EA. Cat K-6330
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$349

Special amateur radio club quantity discount. Just send in your official order for 5 units and save $50 per unit!

70cm GaAsFET Preamp
What performance! Get that extra performance from your UHF rig: 10dB minimum gain (typical 3dB or higher). Includes tx/rx switching with quality coax relays. Noise figure less than 2dB (1.5dB typical).

As described in May '86 EA
Cat K-6309

2m Yagi — 10dB gain
This 9-Element gets you into VHF action sooner — it's pre-drilled. so no tuning hassles. Easy to assemble ... set up in no time.

As described in April '85 AEM
Cat K-6297

Phasing Harness to stack UHF Yagis.
Get better range with two antennas — harness matches both to one feed line and boosts gain up to a whopping 15dB. Suits our UHF Yagi (K-6305).

As described in March '86 AEM
Cat K-6299

2m GaAsFET
Into 2m? Build this one. Same outstanding performance as our 70cm version... and the same outstanding saving! As described in June '86 EA.
Cat K-6311

Special amateur radio club quantity discount. Just send in your official order for 5 units and save $50 per unit!
Looking from Direction Island to West Island across the lagoon on Cocos (Keeling) Islands. (See story, How’s DX column). Photograph courtesy Neil Perdue VK2NE

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— VK4 WIA Notes 58

Jon Stowe VK4QA, for AR, describes some interesting experiences which are published in the Contest Column. They also feature several awards. See page 48 for a description of the Association and details of some of their awards.

Interested in propagation on two metres. An article, originally from Electron and translated by John VK4AO, for AR, describes some interesting experiments which are being carried out in Europe. Field reports irregularly using similar reflecting or bending mediums to Sporadic E. This may be “food for thought” for the VHFR (see page 62).

Don’t forget JOTA, this month. And, if you participate, a short story and some pictures would be appreciated.

Deadline

All copy for inclusion in the December 1986 issue of Amateur Radio, including regular columns and Hamrams, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th October 1986.
R. F. AEROSPACE

"THE NAME BEHIND THE GAIN"

ENGINEERED IN AUSTRALIA TO EXACTING SPECIFICATIONS FOR 14 MHZ TO 14 GHZ

GUARANTEED THE BEST ANTENNAE MONEY CAN BUY

EXPORTED TO THREE CONTINENTS

EXCLUSIVELY DISTRIBUTED BY

DICK SMITH ELECTRONICS P/L

STORES ACROSS AUSTRALIA AND NEW ZEALAND
Editor's Comment

THIS MAY CONCERN YOU!

Two matters of some importance have surfaced via our mailbox in the last few weeks. The first relates to a frequently recurring problem with this magazine. Once again we have almost run out of technical articles. Not material in general; our regular columnists usually manage to put together enough about contests, satellites, DX, awards or whatever to fill their allocated space each month. But you, the readers, have always made it clear that what you want in each issue of AR is a good quota of technical information; and we all prefer it to be written by our own members rather than reprinted from overseas journals.

Unfortunately the supply has nearly dried up! The bottom of the proverbial barrel stares us in the face! (Your Editor has always had a weakness for well-mixed metaphors!) Where are all our technical authors? Probably, like the rest of us, they are so involved with making a living and keeping up with today’s inescapable mass of paperwork that they don’t even have time to get on the air, let alone build a new whizbang gizmo, let alone write a story about it. Rather than just replying to one, it now seems a good idea to address it to you all. Two matters of some importance have surfaced via our mailbox in the last few weeks. The first relates to a frequently recurring problem with this magazine. Once again we have almost run out of technical articles. Not material in general; our regular columnists usually manage to put together enough about contests, satellites, DX, awards or whatever to fill their allocated space each month. But you, the readers, have always made it clear that what you want in each issue of AR is a good quota of technical information; and we all prefer it to be written by our own members rather than reprinted from overseas journals.

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In order to help those installing this program on their system, an example of a simple three element Yagi will be considered.

The data for this example is presented below:

- **Number of elements**: 3
- **Frequency of interest (MHz)**: 300

**ELEMENT NO 1**

- **Diameter**: 0.002, **Length**: 0.475
- **Volts in**: 0, 0
- **Position angle**: 180, **Displacement**: 0.1
- **Series resistance**: 0

**ELEMENT NO 2**

- **Diameter**: 0.002, **Length**: 0.45
- **Volts in**: 0, 0
- **Position angle**: 0, **Displacement**: 0.05
- **Series resistance**: 0

**ELEMENT NO 3**

- **Diameter**: 0.002, **Length**: 0.45
- **Volts in**: 0, 0
- **Position angle**: 0, **Displacement**: 0.15
- **Series resistance**: 0

Some of these items may require further explanation. The frequency in this case chosen to be 300 MHz so that length in metres equals length in electrical wave-lengths, is the frequency in megahertz that the array will be analysed at.

Element number one is the reference element, it is usually the driven element in an array. In this program it will be initially assumed that this is the case, although if need be, later on using the alter option, this can be changed.

Subsequent elements to one can be driven or only parasitically excited. The way this is accomplished in this program is via the "Volts in" parameter: it, as in this example, parasitics only are excited as required then their final peak resistance should be chosen to be 0, 0.

If, however, an element was fed, by coaxial cable or other means, so as to be, say 90 degrees out of phase with the reference element, but at the same level, then 1, 90 degrees would be the appropriate response. Element two in this case is the reflector so, when its reference is made against the NBS Yagi data, this will be the correct answer. Element three in this case is the director and is thus located in front of the drive element.

The results from this array are given below:

<table>
<thead>
<tr>
<th>Currents</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 1</td>
<td>1 + J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 2</td>
<td>-0.284 + J0.234</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 3</td>
<td>-0.46 - J0.628</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impedances</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 1</td>
<td>9.5 - J25.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 2</td>
<td>0 + J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 3</td>
<td>0 + J0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain</td>
<td>7.8 dBi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t/B</td>
<td>18.2 dB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The impedances for elements two and three are, of course, zero because they were chosen to be parasitic elements. If the desired length of element one must be chosen by trial amounts until its impedance was solely real, ie it was resonant. This process does, however, take quite some time as it is necessary to re-calculate the entire array after each change.

See Section 4 (b) for more detail on intermediate values, etc.

**VALIDATION OF THE PROGRAM**

While, as I have said, this program for all its mathematical complexity, in only a model or approximation to the real world. It is always of some interest to compare the results obtained with those obtained experimentally or theoretically by other methods. The program as it stands will only accept up to 10 elements, though this is only limited by the dimension statement which can, of course, be changed.

With this in mind, the available literature was searched to find results that could be comparable. One source was eventually chosen. While it may seem difficult to believe that only one was available it must be noted that the vast majority of literature available literature was not usually inspired with its absolute accuracy or test methods. In fact, even when dBi figures are claimed for gain as being measured, it is rare that the reference is given, ie dBi isotropic or dipole, etc.

The chosen work is Reference 3 (b). In this article, James Lawson gives a good comparison table when he is validating his model against the NBS Yagi data. Part of this work with the results from the model developed here are shown in Table 1. (* National Bureau of Standards (US)).

<table>
<thead>
<tr>
<th>Number of elements</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna Gains in dBi</td>
<td>4.77</td>
<td>7.50</td>
<td>6.71</td>
<td>6.70</td>
</tr>
<tr>
<td>3 elements</td>
<td>9.25</td>
<td>10.02</td>
<td>9.62</td>
<td>9.16</td>
</tr>
<tr>
<td>5 elements</td>
<td>11.35</td>
<td>11.86</td>
<td>11.41</td>
<td>10.73</td>
</tr>
<tr>
<td>6 elements</td>
<td>12.35</td>
<td>13.80</td>
<td>12.64</td>
<td>11.80</td>
</tr>
</tbody>
</table>

As can be seen there is reasonable agreement between the results obtained using this model and other methods. This is particularly gratifying when consideration is given to the assumptions and limitations of the model developed here. The worst deviation appears to be with the last two elements, but even this represents only eight percent error. This difference is probably due to the accumulation of errors, as the amount of processing goes up greater than geometrically with increasing numbers of elements. What the above does indicate however, is that the model will be useful in predicting antenna performance without or before building it.

**ASSUMPTIONS AND LIMITATIONS**

It is vital for any user of this model to understand at least in part the limitations and assumptions on which it is based. These factors will determine where, when, and on what basis, the approximations made during the analysis will be valid.

Firstly, the array as analysed is in free space; ie not above a real ground. This means that antenna performance in a real situation that is not a considerable distance above ground, will not perform in exactly the same way as predicted by this model. This will not usually be too much of a problem as the major effects will be to raise the angle of maximum gain, plus to modify the pattern slightly.

Secondly, the array does not have a metallic boom or other support. Metallic structures like booms will have definite effects on performance. Lawson in Reference 3 (c) discusses this and the first limitation and shows how this can be overcome. Once again this should not greatly affect the usefulness of this program.

Thirdly, there are limitations imposed by the microwaves, such as those used by the NBS, in that the model is run on. Most users of micro-computers are reasonably aware of their machines limitations in speed and accuracy.

Fourthly, the gain routines integrate in 10 degree increments, to simplify mathematical complexity, in only a model or approximation to the real world. It is always of some interest to compare the results obtained with those obtained experimentally or theoretically by other methods. The program as it stands will only accept up to 10 elements, though this is only limited by the dimension statement which can, of course, be changed. With this in mind, the available literature was searched to find results that could be comparable. One source was eventually chosen. While it may seem difficult to believe that only one was available it must be noted that the vast majority of literature available literature was not usually inspired with its absolute accuracy or test methods. In fact, even when dBi figures are claimed for gain as being measured, it is rare that the reference is given, ie dBi isotropic or dipole, etc.

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**A NOTE ON MODELS**

There are two basic types of models, the empirical, and the theoretical. Empirical models are those that have been determined through computer simulation or various other techniques. They are formulated as to give the actual results that have been obtained in the experiments. Theoretical models on the other hand are derived from principles and are not linked to any particular situation. They are the only way to obtain them is by empirical means, as those used by the NBS, or by use of a computer. This is particularly useful for those areas that have not received much experimental evidence, or in perhaps more specialized areas. While the ultimate accuracy of its predictions may not be excellent, they
should in all cases give a good starting point for further investigations.

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The number of different types of antennas are limitless, all it needs is someone to imagine them. Some examples may illustrate this.

If you take the three element antenna given as a test example at the start of this article and add a 35 ohm resistor in the reflector; ie RS = 35 ohms, then the gain goes down. This is no surprise you say; but wait. The gain goes from 7.8 to 7.3 dBi because of increased losses etc, but there are other changes as well as straight loss.

As can be seen, the possibilities abound, all that is needed is a micro-computer and some time you could have an array named after you. It is one very great advantage that amateurs have, there is a vast number of us, and quite a number have micros. The advantage that some researchers may have in access to very fast computers is totally negated by the number have micros. There is a vast number of us, and quite a number have micros. The advantage that some researchers may have in access to very fast researchers may have in access to very fast computers is totally negated by the

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Equation 4. should read:
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Equation 7. should read:
7. \( F(\theta, \phi) = K'' \left( A_n + (2^\phi) \right) S_n \left( \sin(B_n) \sin(\phi) \sin(\phi) \cos(\phi) \right) \)

Reference 5, the authors correct name is Balanis.

Some confusion is possible in the co-ordinate system, (bottom col 1 page 11), as there is a false impression that \( X=1, Y=1, Z=1 \) is the same point as \( R=1, \theta=45° \) degrees, \( \phi=45° \) degrees. This is not the case. In fact the equations relating the co-ordinate systems are given below.

\[ X = R \sin(\theta) \cos(\phi) \]
\[ Y = R \sin(\theta) \sin(\phi) \]
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**SATELLITE TELEVISION**

Australia's commercial television networks have received permission from DOC to relay their programs using AUSSAT. Regional stations will be able to receive the capital city programs and rebroadcast them in their viewing areas.

An encoding system will be used for the next six to 12 months, designed to limit unauthorised reception by electronic enthusiasts and others. Because television encoding technology is new to Australia, the networks will replace this encoding system with one which will be totally secure.

The networks have warned householders in country areas about decoders they may be offered. The decoders will not provide satisfactory pictures and sound during the interim period and will be useless when the totally secure permanent system is introduced.

**BLUE CHIP COMPUTERS**

A cheap IBM compatible personal computer is being tested on the US market.

It will sell through discount stores, instead of specialty computer outlets, for US$899 and be the cheapest PC sold through US retailers.

Called the Blue Chip, it undercut every other compatible computer in the US by at least $200. It has 512 000 characters of memory, one floppy disc drive, a one year warranty and the operating system used on IBM's best-selling PC.

The computer is the most dramatic evidence yet of the fall on personal computer prices, now 30 percent lower than last summer in the US.

Industry leader, IBM, in August cut its price by 20 percent in a move to keep its share of the competitive market.

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GR718 features 4 element Grid Reflector folded dipole driven element with a total of 18 elements on a 3.6m long boom . . . $199, Last few.

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• WELZ SP.400 140-525 MHz, Watt-meter .........$129
• CORONA/JUMBO HP240DX, 200W RF o/p 3-30 MHz, adj rx amp, 4 pos o/p. (Compare to HL-200E and savel) ....................... Only $349
• PANTHER power supplies; 2A $55, 4A $69

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• Call for Kenwood & Icom items not advertised.
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• New BEARCAT/UNIDEN scanners in stock! ..50XL 10 ch $229, 100XL 16 ch $349

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• CHIRNSIDE CA-33 3 el tribander ............ $379
• CHIRNSIDE CA-35DX 5 el tribander on 6m long boom, uses 2 x 10 m elements ............... $479
• CA-5 s/s 5-band vertical, 6m long .......... $169
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RG-213 by Benelec . . . . $2.50/m
Why pay up to $3.90/m for RG-213?

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FT-270H (45W) $679 $899
Yaesu FT-270H 2m FM features 10 ch memory, rptr, 45/5W o/p, 0.2 uV sensitivitly, PMS. Last few.

KENWOOD TM-201B $495
FM 2m 45/5W mobile, 5 ch memory transceiver. Compare to KYOKUTO and AZDEN 25W radios. 12 months warranty on our Kenwood.

YAESU FT-2700RH $950 $999
Dual bander, 70cm/2m, 25W, FM, 0.2 uV, 10 ch mem, PMS. Last few.

NEW COLEMAN BEAMS.
• GR728, 28 el on 430 MHz band
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KENWOOD GR beams feature 4 element grid reflector and 14 day "guaranteed superior" money back offer.

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Includes automatic tuner, mic. Why pay $1585? HF transceiver 100 ch memory, 100W RF o/p, SSB-CW-AM-FM, 0.15-30 MHz rx, selectivity switch, notch, IF shift, NB, etc. Full 12 months warranty.

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The first part of this article described the results of a number of experiments designed to explore the characteristics of crystals and crystal oscillator circuits. Construction details and the measured performance of a temperature controlled crystal oscillator based on the lessons learned in the previous article. Now read on...

Some oscillator manufacturers even the crystal only, leaving the overall stability to the vagaries of the associated components. The design described below, controls the entire circuit right down to the last nut and bolt. The plan is to eliminate, as far as the unit is capable, any changes caused by oscillator capacitor change, voltage fluctuations, internal changes within the transistors, not forgetting the mechanical changes.

The use of multiple components made it a little easier to establish the optimum condition. The technique is to gradually increase C1 and C2, whilst monitoring activity and output. A point will be reached where oscillation will not readily commence, hence slightly lower values must be fitted. These high values will also reduce the reaction of internal change within the transistors to a minimum.

The crystal itself was chosen to work into a 40 pF load, but C1 in series with C2 is much higher than 40 pF. However, this problem is overcome by the stratagem of connecting the various trimming capacitors in series with the divider so that the total now becomes = 40 pF. At this point, mention is made of what appears to be a rather complex trimmer set-up. The silicon power rectifier (IN4004) is used as a "varicap." Dedicated varicap diodes are much more expensive and do not work any better in this application. Note that RV1 is used as a remote control of its capacitance. This feature is to enable the correction of small drifts, caused by aging, etc., without the necessity of dismantling the unit. The 3.9 pF capacitor C4 (4.7 pF) limits the available adjustment to approximately 30 Hertz.

C5 and C6 must be adjusted on test and this point will be reached where oscillation will not readily commence, hence slightly lower values must be fitted. These high values will also reduce the reaction of internal change within the transistors to a minimum.

The trimmer C7 is a multi-turn 17 pF unit, available from Microwave Developments, and seems quite stable. A degree of buffering is gained by taking the output from Q2 collector at the expense of a distorted waveform. This is of no real concern as it will be converted to TTL in the forthcoming square-wave generator. If this represents a real problem it may be readily filtered by a tuned circuit connected externally.

Additional buffering and output voltage is obtained via Q3, a type DS 549. Note the low-pass coupling capacitor C6 which was kept down to 270 pF. This value was selected as a compromise between loading and output. Q4 (BC337) is used as an impedance converter to drive the output coax.

As it is intended to derive the power requirements from the coming square-wave generator, the supply was set at twelve volts. There being two main reasons for this, one being that it may be required to encourage the high frequency operation of reluctant CMOS integrated circuits in the generator, and the other to keep the current lower for a given power in the heater.

Before detailing the construction, a brief circuit description will be presented, refer Figure 1. The signal part of the unit consists of four transistors. Transistors Q1 and Q2 function in the good old reliable Colpitts circuit, Q3 buffers the output whilst Q4 is an impedance converter. Part two describes the circuit.
This makes the sealing easier and reduces trebly regulated. Therefore, the power source going to the heat control sensor. Most semi-value. Subsequently replaced by a metal film trimmer is used to ascertain an approximate stability should be beyond reproach. The use of a single supply line also reduces by two the supply, control being via the temperature prime source, 12 volts, is already regulated, the decision to oven them thus ensuring a convenient position near each of its corners. The template, thus produced is used to mark the location of holes in the base. Remember to drill from the inside and de-burr. The DCB is then used in a similar manner to mark the mounting holes on the copper side of the PC-material. Ensure that they fit together symmetrically. After drilling and countersinking (glass side), screw the two together, complete with lockwashers under each nut. A six millimetre hole should now be made in the control cable end of the DCB. Temporarily run a second nut and flat-washer down each of the four 2.5 mm screws. These will serve as an adjustable mount for the electronics board, which should now be dropped into place. The vertically mounting heater resistors, being the tallest of the components, should be used to verify the lid clearance. Move the height adjuster nuts for equal spacing top and bottom, and then lock them into place using a little paint, etc. The method used to mount the DCB into the Jiffy Box is similar to the above, hence this part will be left to the constructor's imagination. The two pieces of one millimetre bakelite, etc., are used as an insulated base plate. Originally a scrap of aluminium sheet was used, however this proved to be unsuitable due to its good heat conductivity, degrading temperature control. At this stage mark out and drill a four millimetre hole in each corner of the insulated base. The main earth wire connects from a solder lug, under one of the mounting nuts, through the end of the Jiffy Box onto the PC-material. The remaining scrap of PC-material becomes as insulator by being cut, trimmed and glued (metal side down) to fit neatly into the base between the webs and the 2.5 mm nuts. Provision is made for the interface cables via a six millimetre hole in the Jiffy Box. Ensure that the two six millimetre holes do not align with each other. The idea being to reduce unnecessary heat loss. The constructor may, at this time, care to provide a tag terminal handy to the outside six millimetre hole.

Obtain and cut to size the various insulating pieces, which will later be fitted between the six faces of the DCB and the Jiffy Box. Satisfactory material includes styro-foam, old PC-material, mica, and bakelite.

**CIRCUIT DIAGRAM**

There are two on-board regulators provided within the oven enclosure being nine and five volts respectively, (see Figure 2), the former supplying the single electronics, and the latter going to the heat control sensor. Most semiconductors are heat sensitive in one way or another, regulators being no exception, hence the decision to oven them thus ensuring a much more constant output. Note that the prime source, 12 volts, is already regulated, hence the nine volt is doubly and the five, trebly regulated. Therefore, the power source stability should be beyond reproach. The use of a single supply line also reduces by two the number of conductors going into the enclosure. This makes the sealing easier and reduces heat loss by conduction.

**OVEN HEATER**

The heater element, used in the final version, consists of 18 parallel connected 390 ohm metal film resistors.

The energy is supplied from the 12 volt regulated supply, control being via the temperature sensing element Q7 (BF115) driving another Darlington (Q8 BD681). Q7 should be mounted in close contact with the crystal cover; ie soldered.

The final operating temperature is set by "R" and needs to be adjusted on test. A variable resistor is not recommended due to their doubtful mechanical stability. However, a multi-turn trimmer is used to ascertain an approximate value. Subsequently replaced by a metal film resistor of the next lower preferred-value and a 500 ohm multi-turn pot (RV2).

All of the electronics is housed inside a die-cast box which is then surrounded by styrofoam, etc. Further insulation and a neater finish is obtained by mounting the unit into a plastic Zippy Box.

**WIRING**

That about completes the metal bashing, so now we will look at the wiring. The first stage to be addressed is a general layout of the board. Allocate about 50 percent of the available space to the oscillator; ie Q1, Q2 the 10 MHz crystal, its socket and the various tuning capacitors.

The remaining space accommodates Q3, Q4, Q5, plus associated minor components, as well as terminating pins, etc.

Note that pins are provided for all parts that could require changing during the adjustment routine. Pins are also provided for the semi-constant bus, and the crystal socket. With the benefit of hindsight, it may have been prudent to use a wire-in type of crystal, thus eliminating a possible future trouble spot.

The electrical earth bus system is installed as follows: A 10 mm strip of copper (or tin plate) goes across the oscillator end of the board. Leaving one clear row of holes which will be used for the temperature control transistor and its circuitry. Holes should previously have been drilled through the earth strap to coincide with those existing in the electronics board. Likewise, fit a solder lug over the remaining holes at the other end of the board. These two lugs are connected together by bare stiff number 18 gauge wire, which then extends to the ground and approximately eight millimetres from the bottom edge, along to the copper strip. Remember to leave sufficient space for the heater emitter.

The positive supply rail runs along the top edge spaced as per the earth line. However, it stops short of the middle, the exact point should be immediately adjacent to the collector of Q3. The thin wire is again fused and is soldered to strategically placed pins. The Q3 end is extended by means of the decoupling resistor and finishes with another pin opposite Q2 collector.

For the actual assembly, it is strongly recommended that all of the component parts be placed on the bench top and moved around until a suitable configuration is arrived at. The layout of the remaining circuitry almost suggests itself; ie the DC supply is from the top to the bottom of the board, whilst the signal path is from the left to the right.

With the above in mind, insert the pins for the transistors. The base pins for Q3 and Q4 should be on centres 3.30 mm apart, whilst the集心 of Q3 and Q4 collector Q2 likewise. Now wire in the various resistors associated with the transistors. These go direct from the supply rails to the transistor pins, via conveniently placed lands on the DCB.

The control pins are now inserted and are grouped vertically close to the right hand end of the board. At this stage, find a suitable position for the two regulators and insert their respective pins.

Now we are coming to the actual oscillator. This is wired in a similar manner; ie a judicious mixture of pins and tinned wire. The crystal is placed flat on the board and approximately half-way over the copper strip to which it is firmly connected (soldered) by a short length of wire. Now fit the oscillator pins into their assigned position, where necessary connect together and then solder in the various tuning capacitors.

 Mention must be made of the temperature sensing transistor, Q7. This is connected to its...
2. Leave C3, C4, and C5 as specified.
3. Trim C6 until frequency is very close to target, if possible to within 20 Hz and preferably on the high-side. (Strays will be higher when the board is in the DCB).
4. Rotate C7 from minimum through to maximum. Hopefully, the frequency excursion will be in the order of 100 Hz. If not, change C4.
5. Return C7 to mid-point and rotate RV1 from minimum through to maximum. This time the frequency excursion should be about 30 Hz.

When satisfied with the above adjustments mount the oscillator into the DCB, not forgetting the under-board insulator and spring washers under the fixing nuts.

FITTING TEMPERATURE CONTROL

At this stage a little more metal work and wiring is required. Firstly, a small hole should be drilled in the lid immediately above C7. A second hole needs to be provided for the thermometer used in setting up.

This is kept away from both the crystal circuitry and heater resistors. A point midway between Q1 and Q2 and a little above the centre line is a good spot. Even so, inserting the thermometer moves the frequency a few Hertz.

The BD681 oven controller should now be fitted to the inside of the lid. Mount it opposite the thermometer hole and as near as practical to the bottom edge. The transistor leads should face away from the oscillator circuitry and arrangements made for the connections to come out of the lid. These wires should be firmly fixed so as to prevent any possible instability.

The method used by the author was as follows. A 10 mm hole was drilled in the lid and then covered by Vero-board. Three circuit pins were then inserted and Q8 wired to the appropriate tracks.

INSULATION

The next step is to mount the DCB as follows. Fit the thermal insulator into the bottom of the Jiffy Box and then screw in the DCB. Run the control; wires, etc, through the tag strip at one end, whilst the earth wire goes out though the other.

Make one last inspection of your work, and if it is okay screw the lid firmly onto the DCB. Next pack insulation between between the four edges of the DCB and the Jiffy Box. Cut another insulating piece and lay it on the top.

TEMPERATURE ADJUSTMENT

The oven operating temperature is set as follows. Temporarily connect a 10 kohm multi-turn pot, or decade box to the Sensor Control Points and set it to maximum "R." Next insert an ammeter in series with the power supply, and place the thermometer into the designated hole. Ensure that it rests on the oscillator board and is safely supported, externally, so that it cannot fall over and break. (Thermometers are too expensive and inconvenient to replace).

Switch the supply on and observe the ammeter. At this stage, the oven heater should be biased off and the meter will indicate only the current being drawn by the electronics.

Carefully adjust the 10k pot whilst monitoring the ammeter. A point will be reached where the current will gradually increase to approximately 500 mA. Now "back-off" the pot a little so that the heater current drops to 450 mA.

The temperature inside the box will commence to rise and the current slowly decrease until stabilising at around 200 mA. Carefully repeat the adjustment several times until the temperature gets to around the 60 degree Celsius mark.

SENSING RESISTOR

When the indicated temperature reaches that
which is desired, switch off, disconnect and measure the set resistance of the multi-turn.
Now obtain a metal film resistor of the next lower preferred value, build it up to approximately 250 ohms lower than the measured value of the "preset."
This network, along with RV2 (500 ohms) is then soldered onto the tag strip.
The author's model required a resistance of 2.615 kohm and was made up with a 2.2 kohm in series with a 220 ohm unit, RV2 making up the final value.

STABILISATION TIME
Re-power the unit and allow it to settle for at least one hour. The relatively long stabilisation time is due to the low heater power of six watts, and the large thermal mass of the oven enclosure.
If the temperature is other than desired, trim RV2 a little, again allowing a similar settling time.
When all is well, leave the unit run overnight. This long run will eliminate an initial tendency to hunt and should ensure that the temperature gradient within the stabilised oven is minimal. RV2 may require further trimming after this period.

FINAL FREQUENCY ADJUSTMENT
The stage has now been reached where the final frequency adjustment is made. Assuming that the crystal oscillator has been running continuously for at least one week, proceed as follows:

Method One — This is used where a good counter is unavailable.

a) Tune to WWV or a similar station on a general coverage receiver.
b) Set the receiver to AM-mode — narrow selectivity — and plug in headphones.
c) Tune C7 for maximum C" through to minimum whilst carefully listening to the beat. Any error introduced as a result of the stated tolerance may, for practical purposes, be neglected.
d) Carefully adjust C7 until the counter indicates 10,000,000.
e) Fine trim with RV1.
f) Remove test equipment but leave your oscillator running.

Method Two — Using A Frequency Counter

The counter used by the author for all of the development work was a Leader type LDC 85, which has an ovened time base and is specified accurate to ± 0.03 ppm ± one count.
a) Switch counter on and allow it to stabilise for several hours.
b) Set time base to one second.
c) Adjust C7 until counter indicates 10,000,000.
d) Change time base to 10 seconds.
e) Fine trim, with RV1, to 0.000.000.0 (overflow).

Method Three — Lissajous Patterns

The equipment requirements here are: i. A CRO which has both the vertical and horizontal deflection circuitry available for the input of external signals and ii. an accurate reference frequency source. Maybe a counter with a lower resolution than required for Method Two, but utilising an ovened crystal.
a) Have frequency reference fully stabilised.
b) Connect reference to the horizontal input and the oscillator under test to the vertical (or vice-versa).
c) Adjust levels to obtain a convenient sized pattern.
d) Carefully adjust C7 until a nearly stationary circle is displayed.
e) Fine trim with RV1.
f) Remove test equipment but leave your oscillator running.

Method Four —
This method is used where both deflection circuits are not accessible. In this case, a standard dual beam CRO may be used. Proceed as follows:
Connect "the frequency reference", or whatever, to channel one and then select time base to 0.1 uS per division, the gain to give a picture of about four divisions high, and the synchronising to channel one.
Feed the oscillator under test into the other input and again set the controls to give a similar sized picture.
Slowly move C7 whilst watching trace two. Gradually a sine wave will appear, moving from one side to the other as the trimmer is adjusted. A point will be reached where the direction reverses. Stop, when this appears, you have gone too far. Again use RV1 as a final trimmer and set it so that both traces are rock steady.

Method Five —
This method may be used when only a simple single beam CRO is available. Connect both signal sources together via a suitable resistor pad, capacitors and diode. Thus forming a simple mixer.
a) Connect the output from this mixer to the CRO and adjust gain to suit.
b) Adjust C7 to near zero beat.
c) Trim with RV1.

Each of the above methods has its own shortcomings:
1. The main problem here is the modulation WWV.
2. The accuracy of the counter time base.
3. The accuracy of the reference source.
4 & 5. As for three.

The author used Method Two for all of the development work and Method Four for the final adjustment. However, whilst overall accuracy is highly desirable, the main requirement is really stability and repeatability.

AGING
This parameter is rarely mentioned in the general run of amateur radio literature, as it is usually well masked by other aberrations. However, this project has been developed to a stage where the aging shift predominates.
The main cause of aging is contamination within the holder that is redistributed with time, slow leaks, mounting and electrode stresses which are relieved over a period, and "oil-canning." The latter problem is where barometric pressure acts on the crystal can. Positive aging is the most common type and is usually due to the transfer of contamination from the vibrating surfaces. Generally, negative aging is due to leaks in the can.
Following the frequency setting, the oscillator was left running continuously for a period of 300 days. During this time the counter was unavailable.

The change, over 300 days, totalled some 17 Hertz, which averages out to 0.057 ppm per day. This represents a yearly rate of 2.1 ppm and compares favourably with the generally accepted industrial rate of 3 ppm for resistance welded holders.
Further improvement may be had by using a crystal with a cold welded can or, even better, a glass mounted type. These types have an aging rate of about two and one ppm respectively.
A dual oven; ie one within the other, would also help, however one has to stop somewhere or end up emulating the famous Dodo Bird and its ever decreasing circles.
Moreover, proceeding along these esoteric paths leads to more troubles than both
Pandora and Murphy together could ever dream up. Not the least being the measuring accuracies required and of course that ever present problem — cash!

SUMMARY OF RESULTS

At this point, the project was terminated and a summary of the results were obtained. They are as follows:

- **Nominal Frequency**: 10,000,000 Hertz
- **Daily Stability (including aging)**: ±0.1 Hertz, 0.01 ppm
- **Aging Rate per 10 Days**: -0.6 Hertz, 0.06 ppm
- **Yearly aging**: -22 Hertz, 2.2 ppm
- **Oven temperature**: 55.5 degrees Celsius at 23 degrees Celsius
- **Oven temperature “Jitter”**: ±0.1 degrees Celsius at 23 degrees Celsius
- **Ambient Oven Temperature**: 470 ohm
- **Oven Temperature**: 1.0k ohm
- **Oven Current (during warm-up)**: 500 mA (= 6 watts)
- **Nominal Frequency**: 10,000,000 Hertz
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- **Oven temperature “Jitter”**: ±0.1 degrees Celsius at 23 degrees Celsius
- **Ambient Oven Temperature**: 470 ohm
- **Oven Temperature**: 1.0k ohm
- **Oven Current (during warm-up)**: 500 mA (= 6 watts)

It is imperative that this unit runs continuously otherwise the performance will be degraded.

PARTS LIST

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<td>10k Multi-turn Pot</td>
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</table>

Capacitors

- **C1 660**: (2 x 330) Styro R 2831
- **C2 990**: (3 x 330) Styro R 2831

- **C3 3.9 NPO**: 1
- **C4 4.7 NPO**: 1
- **C5 33 NPO**: 1
- **C6 Adjust on test**: See text
- **C7 17 Multi-turn Trimmer**: Microwave Developments C8 270 Styro
- **47 nF Ceramic**: 7 R 2327
- **10 nF Ceramic**: 3 R 2360

- **Semi-Condutors**
  - **DS549 Transistor**: Z 1319
  - **BC337 Transistor**: Z 2910
  - **BF115 Transistor**: Z 1560
  - **BD681 Darlington**: Z 1462
  - **IN4004 Silicon Diode**: Z 3204
  - **78L05 Regulator**: Z 8108
  - **78L09 Regulator**: 1

Macelensious

- **Die Cast Box**
- **L (100 x 50 x 25 mm)**: H 2221
- **Jiffy Box**
- **L (130 x 68 x 41 mm)**: H 2763
- **IC Board (Cut Down)**
- **L**: H 5610
- **Scrap Board**
- **1 mm Bakelite Circuit Pins**: H 5590
- **Screws, Nuts, Solder Lugs, etc.**

Overall View of the Completed Unit.

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**TELEVISION**

The inauguration of an “experimental” regular television service by the BBC in November 1936, aroused sufficient public interest to justify television making steady progress towards a wider popularity. The proviso was that “so long as good programs can be maintained.”

The opening ceremony was conducted alternately by the Baird and Marconi-EMI systems.

The transmitting apparatus was installed in the Alexandra Palace, with each company installing separate equipment.

The Baird system was on 240 lines whilst the Marconi-EMI was on 405 lines.

In the Baird system, three different types of scanning equipment were provided — for studio work “Spotlight” scanning was used — a beam of light was focused through a small water-cooled rectangular window situated at the top of a scanning unit. The scanning disc revolved at 6000 RPM with 240 apertures arranged in four spiral traces, whilst a second disc had a spiral slit and acted as a shutter so that only one of the 240 holes was exposed to light at any one instance.

The transmitter used crystal control, the crystal oscillating at 1.406 MHz, with the output being passed through amplifiers and frequency-doublers.

The Marconi-EMI system was completely electronic, with an Emitter camera employed as a link between the visible and electrical. The basic unit, a pulse generator, provided the necessary pulses for operating the camera and synchronising signals.

—From Wireless World, 1936

**INTERNATIONAL E-POST**

A new electronic mail service, available through Australia Post, guarantees next working day delivery from Australia to over 20,000 towns in the United States of America.

The service, International E-Post is aimed at the Australian and American businesses who require fast delivery. Documents are hand delivered to an electronic mail-equipped post office and then transmitted to a post office in the US.

The message is then printed on high quality paper complete with company logo and signature if necessary and then delivered by courier or mail to its final destination.
DESIGN OF A BAND-PASS FILTER FOR THE TWO-METRE BAND

Having recently acquired an older style solid-state two-metre FM transmitter/receiver, on air tests showed that there was noticeable output on 216 MHz.

This is "spot-on" on channel 11 (our local television translator output), which caused television interference when transmitting.

The 216 MHz output was of a low level but it still caused problems in the local area. The unwanted output was a result of the transmitter's design for no filtering was provided in the output stage — this situation is not uncommon amongst some simpler transmitter designs.

SOURCE OF PROBLEM

The 216 MHz output is a result of the third harmonic output of the 72 MHz stage; ie the 72 MHz signal is doubled to give a desired 144 MHz output, but some tripling to 216 MHz also takes place.

Two possible solutions were considered:

(a) re-design of the PA-stage to further suppress unwanted output
(b) add an external bandpass filter to reduce out of band signals.

Not wishing to alter the design of the transmitter as in (a) (with the possibility of introducing more complex problems) it was decided to choose alternative (b) — design a suitable 'out-board' filter. This choice was also chosen as, having built very simple two-valve type transmitters (Mini Tran 2 — March 1982 AR), the filter could also be used to "clean" this up also.

After studying the various alternatives, I finally settled on the coaxial cavity type, as described in various ARRL publications, but modified to suit locally available materials.

DESIGN

The design is shown in the accompanying diagrams — note the use of older imperial measurements — this was done as older copper pipe was used having imperial dimensions.

The diagrams should be self-explanatory. All rods and half-inch pipe are soldered to the brass cap. The capacitor C1 is fitted between the outer and inner pipe. It also provides support for the top of the inner pipe so the use of a mechanically strong ceramic insulator is not required. Whilst on C1, use a type with a lockable shaft or stiff movement as this sets the passband and should be "bump" proof.

(The Q of the filter is high and, as such, minor variations in C will cause a significant variation in the resonant frequency of the filter — Technical Editor).

ON AIR TESTS

The filter was connected between the transceiver and antenna and peaked to give maximum transmit output power to the antenna. There was no noticeable change in signal reports given with the filter in-line or removed from circuit.

A portable colour television was placed near the transmitter and channel 11 selected. With the filter out, the television was overloaded and the received program totally lost. When the filter was connected, the television showed no signs of interference — thus the problem was solved.

Running one watt of transmit output power with the two-metre and television antennas = one metre apart only slight interference occurred. This also happened with a commercially built transmitter, so pure front overload of the television (a mid-range Japanese model) is suspected.

REFERENCES:

QST, 1964 — ARRL
Amateur Radio Handbook 1976 — ARRL

DECISION APPEAL

Jack Ravenscroft VE3SR, has decided to appeal the Ontario District Court decision that put him off the air and forced him to pay damages and costs for allegedly interfering with the operation of electrical and electronic equipment in his neighbour's home.

Although no additional court appearances will be involved, the appeal process will take many months and cost many thousands of dollars.

From CQRL News April 30

BUYING OR SELLING GEAR?

HAMADS

MAKE IT HAPPEN FAST

AMATEUR RADIO, October 1986 - Page 13
SMALL SIGNAL BJT AMPLIFIERS

How to use the BJT from square-one without resorting to copying a design.

Although a vast number of Bipolar Junction Transistors (BJT) have disappeared into one or another form of chip it is still easier to build say, a microphone preamplifier or whatever, with a BC109 than to reach for a 741 op-amp.

This article describes how to use the BJT from square-one without resorting to copying someone else's design. Since thermal runaway problems went out with germanium devices, a simple circuit as described in Figure 1 may be used.

(Any event, providing that when

\[ V_e = V_{ce} / 2 \]

the collector dissipation is within the manufacturer's rating, thermal runaway cannot occur because whether \( V_e \) increases or falls from this value \( P_c \) reduces.

\[ P_c = V_e \times I_c \]

Work it out for yourself).

Figure 1 is quite adequate for a one-off amplifier but suffers the disadvantage that a replacement device in the event of failure would be unlikely to have the same beta so \( R_e \) would have to be re-selected also.

Figure 2 largely overcomes this problem by providing a large degree of self-adjustment due to DC negative feedback. A BJT with a higher beta would have a lower collector voltage were it not for the fact that less voltage across \( R_e \) reduces \( I_c \) which in turn reduces \( I_e \) thus \( V_e \) tends to stay where it was, and vice-versa.

Some AC negative feedback occurs but because \( R_e \) is large compared to the base input impedance, the voltage gain is almost that of Figure 1.

Where a fixed, low order gain is required, Figure 3 may be used. That is a line amplifier for a microphone with a gain of 10.

It is usual to arrange for the collector current \( I_c \) to be around 1 mA. (The manufacturers beta spread and other data are usually given at this current). To obtain the maximum undistorted voltage output swing, \( R_e \) is calculated to drop half the supply voltage, \( V_{ce} \). Thus with a 12 volt supply:

\[ R_e = (V_{ce}/2) / I_c = (12/2)/1 \text{mA} = 6k \]

\( R_e \) is found by experiment and may vary between 270k and 1M or more. The voltage gain \( (A_e) \) is quite high and is found by dividing a magic figure (26 to 30 mV) by \( I_c \) (mA) and then dividing the result into \( R_e \).

ie 6000 divided by 30/1 = 200

This the 'unloaded' gain. When coupled to another circuit the effective value of \( R_e \) and hence the gain is lowered by the input Z of the next stage being in parallel with \( R_e \).

This calculation using different data is an interesting and rewarding exercise and it is a worthwhile project to program the computer for quick results. You will find, for instance, that varying \( R_e \) has little effect on \( I_e \) (unless it is so high that the BJT is 'bottomed'; ie \( V_e \) is too low; or one or two volts), a popular misconception.

Why should it, looking back up, be missed, this proportion seems sensible. At \( I_c = 1 \text{mA} \) and because \( I_e \) is so small, \( I_c = I_e \) (near enough).

\[ \text{So } R_e = V_e / I_c = \text{say, 1V/mA} = 1k \]

This leaves 8V across the BJT and \( R_e \) so \( R_e \) must drop 4V DC.

\[ R_e = 4V / 1mA = 4k \]

Using the lower value of the beta spread (400 to 800) makes

\[ I_c = 1/400 = 2.5 \mu A \]

Since the 'bleed' current through \( R_{r1} \) and \( R_{r2} \) must be large enough to stabilise the base voltage \( V_e \) a value equal to \( I_e \) \times 10 \text{is chosen}. (Lower currents may be economical when using battery power but beta independence may suffer. Higher values, and lower resistor values may unnecessarily lower the input impedance of the circuit).

\[ I_{em1} + n \cdot I_e = 25 \mu A \text{ and } (R_{r1} + R_{r2}) = 9V / 25 \mu A = 360k \]

There are several ways of calculating the voltage divider but the simplest is probably by proportion; ie

\[ R_{r1}/R_{r2} = V_e/V_c \]

or

\[ V_{bb}/360k = 0.7 \text{ (for SI)} \]

Thus

\[ I_{em1} + 25 \mu A = 25 \mu A \text{ or } (R_{r1} + R_{r2}) = 9V / 25 \mu A = 360k \]

By cross multiplication:

\[ R_{r1} = 1.7 \times 360k = 68k \text{, } R_{r2} = 360k - 68k = 292k \]

The preferred values given in Figure 4 will not adversely affect the operating parameters. With \( R_{r1} \) un bypassed \( A_e = 3.9 \), \( A_c \) with \( R_e \) bypassed is approximately

\[ R_{r1}/re = 3900/30 = 130 \]

Calculations using different data are an interesting and rewarding exercise and it is a worthwhile project to program the computer for quick results. You will find, for instance, that varying \( R_e \) has little effect on \( I_e \) (unless it is so high that the BJT is 'bottomed'; ie \( V_e \) is too low; or one or two volts), a popular misconception.

Why should it, looking back into the collector you have an extremely high Z (A NiCad charger maybe? A constant current source). Achieving maximum gain is also a giggle. For...
very small signals (out) \( V \) may be lowered; ie \( R_t \) increased but if you want the full O/P swing with \( V \), near \( V_o/2 \) then you will have to reduce \( I_r \) also. Since \( A = R_t/\beta e \) and because \( R_t = 30 \) mV/\( I_c \) you will find it quite a battle. Increasing \( R_t \) and \( V_o \) (and modifying the base divider values) will produce a greater gain but do not exceed the makers maximum \( V_o \).

Input Z is \( R_z/\beta e/\beta r \) and since \( \beta r = \beta x/\beta e = 12k \) then \( R_z \) (in particular) does not seriously reduce the I/P Z.

Output Z is 3k9 unloaded but nearer 2k7 when coupled to a similar stage. \( A_w \) would then be 2700/30 = 90.

You will also find that \( \beta \) variations make no difference to calculated values of \( R_t \) and \( R_x \) but cause changes in base divider values and, of course, \( I_r \) and I/P Z.

In conclusion, these are 'small' signal amplifiers and whilst they are okay for microphone amplifiers, they will severely distort a crystal pick-up output unless a series resistor of some 330k in the base signal circuit is included. Good Luck!

---

**DEVELOPMENT OF TELECOMMUNICATIONS**

\( \Delta \) In 1945, there were 41 million telephones in the world. The total today is 668 million, an increase of 1500 percent or seven percent per year over 40 consecutive years. As new services develop — teletex, data transmission, teleconferencing and others — there are no signs yet of a slowing down of this growth.

However, it is interesting to note that three quarters of the world's telephones are located in eight countries only, and the developing countries with 70 percent of the world's population are using only seven percent of the telephones.

From **Telecommunication Journal** — Vol 53, IV/1986

**SATELLITES IN BUSINESS**

\( \Delta \) Satellites are not only changing the face of broadcasting, they are also changing that of business. Today, major growth is occurring in the United States market for private satellite networks, and a number of satellite systems specifically designed to service the telecommunication requirements of business have been developed.

Annual sales of private satellite network earth stations are now estimated at US$315 million.

Private satellite networks offer business voice, data, facsimile, and audio and video teleconferencing services.

From **Telecommunication Journal** — Vol 53, IV/1986

**CHIP PERFORMS UP TO 48 MILLION OPERATIONS PER SECOND**

Philips is launching a 2 \( p \) single-chip, CMOS Digital Signal Processor (DSP) capable of eight million instructions per second (8 MIPS) and up to six concurrent operations in each instruction — an equivalent total of 48 million operations per second.

The high throughput of the PCB5010 results from a highly parallel, pipe-lined Harvard architecture consisting of two 16 bit data buses and five functional sections all working in parallel. The new DSP offers a short instruction cycle time of 125 ns.

---

**ENERGY RATINGS**

Refrigerators and freezers sold in Victoria will have to be labelled indicating their rating of power usage. The labels have from one to six stars — the more stars the more energy efficient the appliance.

The scheme applies to refrigerators from December 1986 and freezers from March 1987.

Referring to Figure 2, it can be seen there are vacant holes for extra diodes; currently only "D1" is installed. The modification is simplicity itself. First, insert an extra diode (1N914 or similar) in the "D2" position. It faces the same way as "D1" does.

Next, take a short length of wire from the "free" end of the diode to any "K3" point. A suitable location is on the back of the memory switch; the yellow wire is a "K3" scan-line. See the circuit diagram in Figure 3.

---

**CONSTRUCTION DETAILS**

Remove the top and bottom covers, thus allowing the front panel to be removed. Most of the "body" is taken up with the RF section, with the microprocessor living just behind the front panel. The knobs are easily pulled off, allowing the front panel to be removed. Most of the interior of the rig — it is embarrassing (STEP; SCAN and TONE) that can now be tested and then reassembled. The STEP switch will now give 25 kHz stepping when depressed, resulting in much quicker band-scanning and frequency selection. It will not increment the megahertz digit when stepping, but hopefully this will be the subject of a future article.

---

**CORDLESS TELEPHONES**

Some unapproved cordless telephones can cause harmonic interference, usually in the 3.500 MHz amateur band.

If you have such problems, identify the users name and telephone number by monitoring, then advise your state DOC office.

Prompt action is assured.

---

**MODIFYING THE AZDEN PCS-4000 FOR A 5/25 kHz STEP RATE**

David Horfall VK2KFL
PO Box 257, Wahroonga, NSW 2076

The Azden PCS-4000 is a popular two metre transceiver but it lacks provision for a step/scan rate of 5/25 kHz.

The Azden PCS-4000 is a quite a popular two metre transceiver, allowing a good deal of control from the front panel and the microphone. One thing that it lacks, however, (in common with many other rigs, I hasten to add) is the provision for a step/scan rate of 5/25 kHz, as opposed to the 5/10 kHz supplied as standard.

It seems that Australia is one of the few countries in the world utilising a 25 kHz channel spacing on the two metre FM sub-band, however the Azden PCS-4000 is remarkably easy to modify in this regard. All that is required is a signal diode (1N914, etc), a bit of wire, a fine-tipped soldering iron and plenty of patience!

Reference to the circuit diagram shows that it is simple to convert the 10 kHz rate to 25 kHz. All that is required is a link between the "K3" and "R5" scanning lines as well as between "K1" and "R5" when the "STEP" button is depressed. Refer to Figure 1 for the Truth Table. It should be mentioned at this point that despite the apparent complexity of the control panel, very few functions are "hard switched" — which is to say that most functions are accomplished by scanning various control lines with suitable decoding firmware.

Referring to Figure 2, it can be seen there are vacant holes for extra diodes; currently only "D1" is installed. The modification is simplicity itself. First, insert an extra diode (1N914 or similar) in the "D2" position. It faces the same way as "D1" does.

Next, take a short length of wire from the "free" end of the diode to any "K3" point. A suitable location is on the back of the memory switch; the yellow wire is a "K3" scan-line. See the circuit diagram in Figure 3.

---

**Beware!**...the yellow wire on the switchboard is not a "K3" line. Also the circuit diagram has a mistake — the line shown as "K5" on the memory switch "SW1" is actually "K3" — the one we want!

With this being done, the unit may now be tested and then reassembled. The STEP switch will now give 25 kHz stepping when depressed, resulting in much quicker band-scanning and frequency selection. It will not increment the megahertz digit when stepping, but hopefully this will be the subject of a future article.

We have been unable to locate a schematic circuit for this transceiver, so we are unable to check all of the details — Tech Ed.
Last month, the principles of operation of a Direct Conversion (DC) receiver were outlined, with the promise of a construction article to follow. Following is the construction details.

**PERFORMANCE**

**Frequency Range:**
3.5 to 3.7 MHz.

**Reception Modes:**
CW, SSB, DSB, AM (as DSB) and RTTY.

**Sensitivity:**
0.4 µV for 10 dB S + N:N.

**Selectivity:**
50 dB down at 100 Hz, 45 dB down at 10 kHz.

**Spurious Responses:**
None.

This is not a simple "Mickey Mouse" project, but a serious attempt at a receiver of more than adequate performance. My guess is that the circuit is a little more complicated than expected. This is because satisfactory performance cannot be obtained with just the handful of components needed for a 'bare bones' DC receiver. Sure, we could hear signals on something made up of a dual-gate FET product detector, a one-transistor VFO and a high gain audio amplifier. Unfortunately, such a receiver would be sadly lacking on all points. I have made receivers like this, and they always prove disappointing. Strong signals 'swamp' smaller ones, the VFO pulls (varies in frequency) on strong signals, selectivity is poor, and hum can be a problem where mains wiring is nearby.

This project is based upon the receiver I described in *Amateur Radio* for March '84. As only one band is required in this instance, the design is greatly simplified by the omission of the frequency divider board. The audio board is used again here with no change. In addition, factory-made printed wiring boards (PWBs) are available for this project, offering an added incentive to would-be constructors.

**CIRCUIT**

To prevent overload, only the band of interest; 3.5 to 2.7 MHz, should be presented to the input of the RF amplifier. L1 and L2, tuned by C1 and C3 form a top-coupled empirically designed band pass filter. An RF gain control R1 (an attenuator really) is provided so that overly powerful signals may be reduced to an acceptable level.

The broadband RF amplifier at Q1 is a popular favourite. This amplifier is a 'strong' one, with feedback and a hefty small-signal transistor (2N3053 or 2N5109, etc), not easily overloaded by strong signals. Such an amplifier would still be operating linearly long after a FET or dual-gate FET had reached its limit of linearity. About 10 dB of gain is provided. Noise performance is not particularly good, but on 80 metres, man-made and atmospheric noise will, in practice, obscure any noise contributed by this stage.

The active product detector is also a favourite. This amplifier is a 'strong' one, with feedback and a hefty small-signal transistor (2N3053 or 2N5109, etc), not easily overloaded by strong signals. Such an amplifier would still be operating linearly long after a FET or dual-gate FET had reached its limit of linearity. About 10 dB of gain is provided. Noise performance is not particularly good, but on 80 metres, man-made and atmospheric noise will, in practice, obscure any noise contributed by this stage.

The product detector is also a favourite. It is singly balanced, in that the input signal is applied to the differential input in push-pull at pins 1 and 5 of U1, a CA3028 current sourced differential pair, and VFO energy, at or near the frequency of the incoming signal is applied to the base of the current source transistor of U1. The sum and difference products are available at pins 6 and 8. R12 and R13 provide a balanced load, across which the difference products; about 7 MHz, are suppressed by C12 and C13.

A Colpitts oscillator VFO at Q2 tunes from 3.5 to 3.7 MHz. As variable capacitors are becoming increasingly difficult to obtain, a common varicap diode, type BA102 at D1 is employed to vary the VFO frequency. The required capacitance variation, about 60 pF, is affected by R23 (course, or main tuning) and R26 (fine or RIT). So R23 yields about 200 kHz variation, and R26 about 4 kHz. A buffer amplifier at Q3/Q4 supplies about one volt p-p to U1, and isolates the oscillator from any load variations from the product detector — so reducing any frequency pulling effects from strong signals.

The component designations on the audio board derive from the '84 receiver. U6 functions as an interface between the differential output of the detector and the single ended input of the audio filter. It is at the same time a low impedance source for the input RC network at the input of U7. Detected signals are first applied to a 2.4 kHz low pass filter to remove all unwanted higher frequency products. The LPF is a fourth order Butterworth, with an attenuation at 10 kHz of 45 dB. This filter is followed by a fourth order 350 kHz high pass filter to remove unwanted lower frequency products. The HPF section has an attenuation of 50 dB at 100 Hz, so it is possible to resolve SSB, DSB, AM and CW signals with ease, because all redundant low frequencies are removed by the HPF Power line related noise (50, 100, 150 Hz, etc) is also greatly attenuated. By backing a LPF against a HPF in this manner, a band pass filter is formed. Ringing is not a problem, as each section of the filter is independent of the
RF Amplifier, VFO, Product Detector.
L1, L2: 28 turns 26 B&S (0.32mm) enam on 5 mm former, F18 slug
T1: ~13 loops 24 B&S (0.50 mm) enam twisted biffar on Amidon FT50-43 toroidal core
L3: 32 turns 22 B&S (0.64 mm) enam on Amidon T68-2 toroidal core
S: Styroseal or poly
NPO: 'Negative-Positive-Zero'
G: Greencap Polyester
L4: RFC; 2.5 mH, DS P/N L1824
others. R86/R87, bypassed by C81/C82 provide a centre reference to the plus and minus supplies for the op-amps in the audio filter.

The BPF is followed by an LM301 at U11 with a mid-range gain of about 40 dB, followed by an LM380 at U12 to adequately power speaker or 'phones. AF signal is picked off at the output of U11 and applied to the S-meter amplifier U13. The signal from U13 is rectified, and C75 is charged positively. The time constant of C75/R77 is chosen so that the S-meter reads an average value according to the strength of signal. Liberal decoupling is applied throughout the receiver to prevent instability.

CONSTRUCTION

All components are accommodated upon two PWBs; one for the RF amp/product detector/VFO, and another for the audio BPF/audio amp/S-meter amp. My receiver is assembled in a case measuring 255 x 77 x 155 (HWD) with a removable lid. No doubt the unit could be made much smaller than this. One approach could be to use one of those attractive plastic cases with a bail handle, intended for things like counters. The PWBs could be mounted back-to-back, with a panel between. These cases are fairly expensive however.

The power supply should not be built into the receiver. As can be imagined, with all that audio gain in there, to incorporate mains power supply is asking for trouble. A suggested circuit is presented here as a guide. Information on power supplies abounds in technical literature, and need not be repeated here. The receiver will work quite happily from 9 volts to about 15 volts, and draws about 100 mA.

The speaker may be placed inside the case along with the receiver, but spurious resonances and rattles could be a problem. An external speaker gives a much cleaner sound, and this is strongly recommended.

Some sort of readout for frequency will have to be provided. In the past, we would simply have bought one of those Jabel or Eddystone dials, but now mechanical dials have become horribly expensive and difficult to obtain. This was another factor which indicated the varicap and pot scheme. By using a pot for the tune control, we now get 270 degrees of rotation for our 200 kHz, against only 180 degrees for a variable capacitor. Let me indicate the perceived dial options:

- Two pots, the course pot fitted with a commonly available knob calibrated 0-10, and a lookup table or graph, as in the photograph.
- A 20k, 10-turn pot for R23 fitted with a turns counting dial and a table. This is a costly choice; pot about $10, dial about $30.
- Substitute a capacitor for D1, etc. A 100 pF variable in series with a 150 pF styroseal would be fine. If you have a nice capacitor/drive tuck away somewhere, then this could be just the thing to hunt it out.
- Frequency counter. If you want a really classy readout, you could incorporate a frequency counter for the display. It must be well shielded of course. Sufficient signal level exists at the emitter of Q4 for this. Radio Spares have a 4½ digit counter module; P/N 258-D63 for about $75 if you are keen. Alternatively, if you already have a counter, simply extend the VFO signal to a panel mounted coaxial socket for the counter connection. Take care that there is not excessive 'kick-back' noise from the counter input.

The boards may be assembled and tested in stages. First perhaps, could be the audio board. If the S-meter is not required, all the components associated with this feature may be omitted; ie C70 through to R81. LM741s may be substituted for the 308 and 301s, but they are slightly noisier however. The 33 pF gain compensation capacitors must be left out if 741s are used. With this board assembled, and component locations/polarities checked; 12 volts may be applied. With the AF gain pot fully CW, a small amount of hiss should be heard. A screwdriver blade touched to either input at C49 or C50 should produce an audible buzz. If you want to test this board more fully, a small 2k2k transformer (not critical) must be interposed between the balanced input and an unbalanced audio oscillator. Remember, the input is balanced, so any serious imbalance could cause the amplifier to oscillate.

Now the VFO, product detector and RF amp board may be assembled. Winding L1 and L2 could be a bit tricky if you have not wound small coils before. First, glue the L1010 formers to the L1015 bases. About 650 mm of 28 B&S enamel wire will be required for each coil. Solder the base end start of the coil into the pin corresponding to the earthy end of the coil (check the PWB), and anchor the free end of the wire in a vice. Screw the F16 slug about half-way into the top of the former. Keeping the wire taut; wind on 28 turns. You will find that the slug could cause the amplifier to oscillate. Now the VFO, product detector and RF amp board may be assembled. Winding L1 and L2 could be a bit tricky if you have not wound small coils before. First, glue the L1010 formers to the L1015 bases. About 650 mm of 28 B&S enamel wire will be required for each coil. Solder the base end start of the coil into the pin corresponding to the earthy end of the coil (check the PWB), and anchor the free end of the wire in a vice. Screw the F16 slug about half-way into the top of the former. Keeping the wire taut; wind on 28 turns. You will find that the slug could cause the amplifier to oscillate.

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such as nail polish, varnish or shellac to hold
the turns in place. When dry, the top and finish
may be soldered to the other pin.

T2 is made as follows:

Firstly, the Amidon cores must be coated with
some lacquer such as mentioned earlier. This
will reduce the possibility of shorts occurring
should the wire enamel be scratched during
the winding process. Take three 300 mm
lengths of 24 B&S enamel wire. Lay them
together to each other, and twist them together
at one end. Clamp this end in a vice. Draw a
cloth through the wires to remove any wrinkles.
Now twist the free ends together and fix them
in the chuck of a hand drill. Whilst keeping the
wires taut; turn the drill until there are about
three twists per cm. Give the drill a tug to set
the twists, then remove the twisted group.
Carefully thread the triplet onto your core until
the centre tap ct. Do not solder these,
located on it and I shall extend any reasonable amount of
help necessary.

PARTS
Care has been taken to select parts which are,
to my knowledge, readily obtainable. The only
components which may be difficult for some
are the toroids and the CA3028. These are
available from Ian J. Truscott's Electronic World,
whose address is given below. The component
parts of L1/L2 and the signal meter are
available from Dick Smith Electronics. If you prefer
to buy all your components from one
source, a kit is available as follows:

Complete kit of parts, including PWBs: $95.00
Just 'Bare-Bones' — PWBs, toroids, all
semiconductors: $52.00
Case (as in photograph): $15.70
(All prices include postage.
SUPPLIER
Ian J. Truscott's Electronic World, 30 Lacey Street,
Croydon, Vic. 3136.

REFERENCES AND FURTHER READING
2. Practical RF Design Manual — DeMaw
3. High Performance DC Receiver — Diamond,
VK3XU, AR, March '84
4. The Design of Active Filters with Experiments — H.
Benjamin
5. Direct Conversion CW Transceivers — Price
G48WE, Red Comm, Jan '86

PARTS LIST
RF Amplifier/Product Detector/VFO Board

CAPACITORS

<table>
<thead>
<tr>
<th>Value</th>
<th>Ceramic</th>
<th>Poly styrene</th>
<th>NPO disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.6 pF</td>
<td>C18</td>
<td>C19</td>
<td>C20</td>
</tr>
<tr>
<td>18 pF</td>
<td>C5</td>
<td>C21</td>
<td></td>
</tr>
<tr>
<td>22 pF</td>
<td>C22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 or 60 pF</td>
<td>C23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>470 pF</td>
<td>C1, C3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 pF</td>
<td>C19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200 pF</td>
<td>C2, C4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.01 pF</td>
<td>C6, C12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Supply.
25 µF (or 22 µF) PC mount C65, C72, C73 electrolytic
220 µF > 16V electrolytic C67, C88
1000 µF 25V electrolytic C81, C82
1000 µF 25V PC mount C79 electrolytic

RESISTORS
2.7 ohm 1/4 W 5% R85
100 ohm 1/4 W 5% R70, R88
100 ohm trimpot R62
470 ohm 1/2 W 5% R86, R87
1 kohm 1/4 W 5% R66, R75, R76
1.5 kohm 1/4 W 5% R81
2.2 kohm 1/4 W 5% R52, R60
8.2 kohm 1/4 W 5% R50, R51, R54, R55
10 kohm 1/4 W 5% R46, R47, R48,
R49, R58, R61 R62, R65
15 kohm 1/4 W 5% R53, R59
18 kohm 1/4 W 5% R57, R63
22 kohm 1/4 W 5% R56, R64, R67, R68
27 kohm 1/4 W 5% R71
47 kohm 1/4 W 5% R73, R74, R78, R79,
R80
100 kohm 1/4 W 5% R69
820 kohm 1/4 W 5% R72
1 Mohm 1/4 W 5% R77, R84
1 Mohm C taper pot R83

SEMICONDUCTORS
1N914/1N4148 Q10, Q11
2N2222/2N3904 Q6
2N3638 Q7
LM308 U6
LM301 U7, U8, U9, U10,
U11
LM741 U13
LM730 U12

Software
Case, 255 x 77 x 155, large knobs; one calibrated 0-10 (2 required), small knobs (2 required), signal meter; 250 µA; DS PIN Q2100, input connector, headphone socket, speaker socket, screws (8 required), nuts (8 required), spacers (8 required), hook-up wire, small 50 ohm coaxial cable (300 mm). (Speaker; not supplied in kit).

"Two of your QRP friends to see you, dear..."
—Cartoon courtesy The Short Wave Magazine, March 1986

AMATEUR RADIO, October 1986 - Page 21
DOLLAR DECLINE — What it means

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

AMATEUR RADIO.

A look at the dramatic drop in the value of Australia’s dollar, and its impact on amateur radio. Some of the people in the industry, which imports or makes equipment for radio amateurs and other communications/electronics enthusiasts, have been interviewed and their thoughts on the current economic situation give an up-to-date insight into the industry.

The newspaper headlines say it all — the bottom line exchange markets. This has come about because, internationally, our dollar has been devalued, due to this country’s balance of trade situation, rate of inflation, unemployment, level of overseas debts and other economic factors.

Most amateur radio equipment is imported from Japan and the dollar has taken a nosedive against the Japanese Yen, which is currently one of the world’s strongest currencies. About 12 months ago, currency exchange was 160 Yen to the Australian dollar, but the exchange is now in the low 90s — a decline since January of about 35 percent.

A typical Japanese transceiver costing about $399 12 months ago, now sells for $499, a 60 percent increase, and industry sources predict further price increases.

The pricing structure which determines the retail price of equipment is too detailed to be fully explained in this article, however, there is a price chain before the consumer. This starts with the price of equipment in Japan, the freight to Australia, Customs Duty and Sales Tax. The retailer adds a markup to cover overheads — the level of which depends on various factors including competition in the marketplace and what the market can stand.

With landed prices so high, and rising because of the exchange problem profits are low and some retailers, who find themselves out of stock, are often unable to quote a firm price to the buyer. This is due to the unknown fortunes of the Australian dollar or whether there is a price rise just hours away.

DICK SMITH ELECTRONICS

The high price of new equipment is seeing a rival in home-building. Dick Smith Electronics (DSE) is one to move in and provide kits aimed at radio communication enthusiasts. DSE General Manager for Technical Products, Garry Crapp VK2EX, says the situation forces people back to building equipment.

The Company has produced a large number of kits over the past few years. There has been a string of 18 DSE kits including the VHF Commander transceiver, UHF Explorer transceiver, a HF transceiver, power meter kits for VHF and UHF, a direction finder, 100 watt linear amplifier, 13.8 volt 15 amp power supply preamplifiers, computer interfaces, frequency counters and antenna kits. Next will be a packet radio kit, combining the computers with amateur radio. Considerable savings can be made by the consumers constructing their own equipment.

DSE have evolved kits which require only a screwdriver and soldering iron. Garry says he is committed to seeing that kits are developed to meet the needs of enthusiasts. He says: "It’s not a matter of saving money but of getting back to home-brewing."

He says this activity as far as amateur radio is concerned can be considered as a service rather than a business activity, at least during the present economic climate.

AMATEUR RADIO MAGAZINE KIT PROJECTS

Another success with kits has been the 80 metre transmitter by Drew Diamond VK3XU. The same is expected for the 3.5-3.7 MHz 80 metre direct conversion receiver described elsewhere in this magazine. These kits are available from Ian J Truscott’s Electronic World.

The technician with this retailer, Ron Van Bremen says Drew approached Truscotts to see if they were interested in sourcing his transmitter kit and marketing it. The exercise has been successful so far with in excess of 50 kits being sold and mail order inquiries still arriving.

Mr Van Bremen says his transmitter kit is any indication the receiver kit should take-off.

"The good thing about the transmitter kit is that you can get on the air with a few watts for about $25, if you provide your own case. The receiver kit is more complex and will be slightly dearer in price."

BAIL ELECTRONIC SERVICES

Bail Electronic Services has been an authorised agent for Yaesu equipment since 1963. This company spearheaded the importation of Japanese transceivers and other communications equipment into Australia and was successfully run by the Bail brothers, Fred and Jim, until 1979. Known as "Bails," it was sold to Stan Roberts VK3BSSR, after the death of Fred Bail.

Stahn, a radio amateur for 38 years, has spent all his life in communications, including being a PMG engineer. He runs the importing and servicing business from Wangaratta in north-east Victoria.

Commenting on the exchange rate problem, he says: "It's virtually doubled the price of equipment over the past 18 months. It's obviously had an effect — I don't know what I should order because payment assistance or stock is more complex and will be slightly dearer in price."

The downturn has forced him to rethink the technician in August.

Stan says what should concern people is, if the likes of Bail Electronic Services disappears from the amateur scene it will leave a hole in the availability of equipment maintenance.

Bails can be likened to the now extinct corner grocery store, where service and advice were paramount — totally different to the modern supermarket merchandising approach.

Bails has a good reputation throughout Australia and customers, both amateur and commercial, ship their equipment for service from all corners of the country.

EMTRONICS

The dollar crisis has meant an expansion of its manufacturing section for Emtronics, whilst still maintaining its import and retailing activities.

Company Director, Elizabeth Breznik, says she cannot predict anything but a further deterioration in the exchange rate for a short time to come.

Despite the economy, she says the family business has had a "climbing upward trend in turnover during the past year — we've actually done better this year than last — close to a 30 percent increased turnover."

Elizabeth says: "The only way to do that is to work as a family — to give more than take — and if everyone in Australia did that things would improve."

This astute business woman is well aware of the Federal Government’s current drive to boost Australia’s exports and "Buy Australian" campaign because of the country’s poor balance of trade situation. Perhaps Emtronics will catch this wave of patriotism which is likely to include some government assistance for those wanting to put Australian products into overseas markets.

Husband Rudi VK2AOT, also a Director, explains that Emtronics is making about nine products, aimed firstly at the Australian market, but with an eye on exports — including into the
Japanese market. These products include an antenna tuner and a cross-needle SWR meter with built-in dummy load.

Rudi's found that when importing this equipment it is too expensive and people won't buy it. A popular imported cross-needle SWR meter now costs about $250 retail in Australia.

Emtronics are starting to make beam antennas and are gearing up for mass production with the aim of exporting most of them to Japan.

Other equipment manufactured by the company include linear amplifiers and regulated DC power supplies. It has already received inquiries from overseas for this equipment.

After business hours, Rudi is concentrating on product design and is convinced there is no need to be too fussy to get production up and running. He says that during his buying visits to Japan for the company, he has had a good look at how electronic goods are made in that country. He is now training and sub-contracting people to mimic the "Japanese kitchen industry where subcontractors get paid for every piece — that is the only way to compete."

Strictly maintain quality control, every item from the subcontractor will be tested in Emtronics workshops before being sold.

ICOM

Kyoshi Fukushima VK3BZX, Managing Director of Icom Australia, says that, while there is a compressed market for amateur radio equipment, the company has maintained its prices structure since January, as radio amateurs cannot afford the higher prices.

Icom Australia has been operating for about four years and is owned by Icom Incorporated of Japan. Kyoshi says Icom equipment in Australia sells at retail prices "even lower than in Japan."

He says: "We want to keep the prices as low as we can — and compete with more features in our equipment. Consumers can shop around and look for quality — it's not just price, but a quality product with more features."

"Icom engineering people are putting a lot of care and effort into keeping costs low — designing with more components to make simpler, reliable and better performing equipment in many aspects."

Icom Australia has supported its amateur radio equipment prices through the sale of marine and land mobile equipment, but obviously prices will have to rise in the near future.

KENWOOD

Kenwood Australia, owned by the Trio-Kenwood Corporation of Japan, is in a similar position. National Sales Manager, Sandy Bruce-Smith says that Kenwood has been growing dramatically since it stabilised the price of amateur radio equipment since January.

Sandy says: "We're riding it as long as we can, but we have to remain profitable."

He cites prices in Australia as being very competitive with those in Japan. For example, to buy one TS-440 transceiver in Japan and bring it into Australia would cost $1800-$1900. This unit is available in Australia through Kenwood for $1585.

KCC

KCC is a Sydney-based company run by Kay Bruce-Smith, Sandy's wife, and is making inroads into ancillary communications equipment such as dip meters, noise bridges, receiving antenna tuners and line filters.

Kay says the company, which started four years ago, is exporting mainly to the South Pacific. The dip meter is all Australian except for about three components — a variable capacitor and two transistors.

She says: "Radio amateurs are realising that dip meters can only be made in Australia!"

But to produce equipment with intricate moulding and complexity requires a high turnover — so the Japanese, already tooled up for this, will continue their hold on the electronics market.

Commemorative Transmission Marks

A CLIMBING OF MOUNT EVEREST IN THE ELECTRONICS FIELD

Jim Linton VK3PC

4 Ansett Crescent, Forest Hill, Vic. 3131

The 80th anniversary of Australia's first land wireless broadcast was commemorated by radio amateurs in Victoria and Tasmania.

At 1 pm on July 12, 1906, the first message was transmitted by wireless telegraphy between Queenscliff, Victoria, and Devonport, Tasmania. This was a communication milestone which bridged Bass Strait to link Tasmania with the mainland.

Exactly 80-years later, Alf Forster VK3AJF and Russell Walker VK3CM, of the Geelong Amateur Radio Club (GARC) huddled in a tent at Golightly Park to communicate with Jim Davis VK7OW, a former WIA north-west branch historian, at Devonport.

It took the GARC team about 60 minutes to set up their station for the prearranged sesh on 3.610 MHz. Russell said the anniversary was mentioned at a GARC general meeting and most local radio amateurs were not aware of the historic experiments carried out by the Marconi Company in their local area.

He said the site, which was now a football oval, has a granite cairn which gives details of the first communication in 1906, and lists those who were present. The timber building, used then, has been removed and is now in a state of disrepair on a nearby farm.

During the commemorative transmission, Jim read an old newspaper report which said that communications were exchanged between the Governor General of Australia and the Governor of Tasmania. He had taken a keen historical interest in the first transmission and explained how the opportunity resulted in a half-day public holiday.

"Bookmakers took bets that the signal would not come through," Jim said.

There is a cairn at East Devonport to mark the historic spot, and Jim has pictures of the building used for the transmission.

The Marconi Company wanted to sell wireless equipment to the Australian Government and sent engineers to Queenscliff and Devonport to conduct the experiment.

Russell said: "The Marconi Company showed great initiative to spend money and come out to do the experiments."

"It was, of course, a commercial exercise — I think they knew it would work and it wasn't so much an experiment."

He had read up on the event and talked to others about the type of spark equipment and size of antennas used for the transmission. "It was really the pioneering days — a climbing of Mount Everest in the electronics field."

"Experts travelling from the United Kingdom to set up the massive antennas and complex equipment would have cost hundreds of pounds," Russell said. Taking part in the commemorative event made him feel a bond with the wireless pioneers. He felt an increased awareness of the difficulties they had, not only technically, but in convincing others that wireless telegraphy would work.

He said: "Commemorating the transmission was a worthwhile experience and helped make young people aware of the pioneering days."

After the initial commemorative transmission, 18 other stations joined the event.

The WIA 75th Anniversary had stirred many into thinking about the history of our hobby and radio communication. But the 80th anniversary crew got up on the GARC, leaving the club with little preparation time.

Russell said he hoped the century of the first land wireless broadcast on July 12, 2006, was "a truer re-enactment" with the involvement of dignitaries. "It would be good to have dignitaries involved — it could make the whole thing more important to the general public."

The 36-year-old said he would like to be at the century commemoration, but considered younger radio amateurs of that time should run the show so they can feel the same bond with the pioneering spirit and carry on the tradition.

UP, UP AND AWAY!

JAS-1 was launched on August 12, 1986 at 2045 UTC from Tanega-shima Island, along with two other satellites.

JAS-1 was heard on its first orbit over Australia with the beacon on 435.795 MHz. The orbit duration was 120 minutes, typical fast time 20-25 minutes.

Australian amateurs conducted two-way communications using voice on the first day of orbit.
Field Aligned Irregularity (FAI)

This article originates from HB9QQ and was published in Electron June 1986. It was translated for AR by John Aarsse VK4QA. (Electron is the official journal of VERON).

During the last few years, various publications have hinted the probable existence of new, and until now, little known or unknown propagation modes on two metres. As the title indicates, it will deal with a phenomenon caused by the irregularities in the earth's magnetism. This article will attempt to steer these unknown, but very interesting propagation modes into practical realities.

It is possible that interested amateurs will be able, with minor modifications to their equipment, to make FAI-DX QSOs on 144 MHz. The following will make it possible for amateurs to more or less clearly understand the phenomena and thus be able to conduct a reasonable DX QSO.

PHYSICS BACKGROUND

FAI contacts use a special type of reflecting or bending medium, similar to Sporadic E contacts. The difference is that the medium can be imagined not to be a flat surface, but more as a snake-like pattern along the magnetic force lines. Experience so far indicates beyond doubt that FAI Is concurrent with a given E situation. The propagation mechanism can be imagined as an ionisation along the magnetic field lines about 100 kilometres above the earth. The 144 MHz signals are transmitted into the FAI zone and then are "bounced-off" in a very particular angle to the field lines. This area is known as the "scattering area."

Further, it is known that FAI contacts in southern Europe (equal to approximately South Queensland/Northern New South Wales) are more prevalent than in northern Europe. As these phenomena are quite complex, no further discussion is possible within the scope of this article.

FAI OPENINGS

As stated earlier, FAI openings are usually possible whenever there are E possibilities. Figure 1 shows during which seasons it is possible to encounter FAI contacts in the Northern Hemisphere. A similarity with the E season is evident. But FAI contacts are possible when there are no E possibilities. Further, FAI contacts were observed after an E opening.

Because of the fact that so far very few reports have come in about FAI openings, it is not yet possible to give reasonably accurate predictions as to which season is the best. Indications are that May until the end of September appear to be the most productive in the Northern Hemisphere. Smaller possibilities in December and January have also been observed. But it is clear that FAI contacts should be possible when no E is recognisable on 144 MHz.

TIME OF FAI

Nearly all known FAI contacts were made between approximately 1700 and 2400 UTC, with a minimum between 2200 and 2400 UTC. (See Figure 2).

Figure 2 — FAI possibilities time-wise.

CHECKS

To have probable FAI possibilities, Sporadic E propagation should be possible, for instance on 50 MHz. To check for FAI, the following procedures are possible:

- check the 28 MHz band
- check the television channels (48-54 MHz)
- check the east European 70 MHz broadcast band.

If, for instance, strong 28 MHz signals are coming from Rumania (YO), one can assume that the FAI "incoming" area is in locator JN 66 (approximately Longitude 12.8 degrees east, Latitude 46.5 degrees north).

If 28 MHz signals are audible from the Crimea, KN 75 (approximately Longitude 34.8 degrees east, Latitude 45.56 degrees north) and one also hears the 70 MHz broadcasts, then one can assume that the FAI entry is around JN 97 (near Budapest). Here again, the position is latitude of the FAI zone can be determined. In any case, both stations must direct the signals towards the FAI region and not towards the other station. Further, it should be noted that the reflection is not linear, but follows a half-circle path south of the FAI zone. This small zone is shown by the broken line in Figure 3.

Figure 3 — FAI Zone Format.

The same illustration shows that with a fixed antenna direction of 54 degrees the following contacts are possible: ON, Central Germany, West Poland, UC and UA. It must be understood that the FAI zone position can shift and thus the antenna must follow this direction. In this case, both stations must direct the signals towards the FAI region and not towards the other station. Further, it should be noted that the reflection is not linear, but follows a half-circle path south of the FAI zone. This small zone is shown by the broken line in Figure 3.

This position can then be fed into a computer and the angle can then be shown graphically. (See Figures 3, 4 and 5).

Figure 4 — FAI scatter at 47.5N and 22E (locator KN07XN). Transmitting station located along line +11 and QSO possibilities with stations along line -11. Azimuth 084 Elevation 1.

Figure 5 — FAI Scatter at 55N and 6E, locator JO35AA. Transmitting station along line +21 (GM, OZ, UG).

TECHNIQUES

Experiences so far indicate that a minimal station concept is necessary to achieve representative results. Very important is a large antenna system to accurately determine the position of the FAI zone. An excellent array would be a 4 x 11 stacked array. Further, it is essential that the elevation is adjustable. Nearly all the usual receiver preamplifiers are good enough to get a reasonable sensitivity, while about 250 watts on the transmitter side should be sufficient.

OPERATIONS

Usually, FAI signals are very weak and often have a typical sound in the form of flutter or noise, similar to the signals but not as deep modulated. Because of these problems, most FAI contacts are made on CW. The difference between FAI and ES signals is that FAI signals are usually very weak but are more constant than ES signals.

CONTACT PROCEDURES

It is beyond doubt that FAI is a very interesting propagation mode. The reason why FAI contacts are not too successful up until now is probably due to the lack of specialist experiments in these areas. Also, there is hardly any communication and co-ordination between the interested in FAI in Europe. As a result of this article it is hoped that FAI will become better known and a start can be made to systematically research FAI as follows:

a) As from April this year, a start was made of systematic tests in certain areas; eg G, EA, F, DL, I, HB, YU, HG, YO, LZ.

Any predictions of FAI propagation will be announced on any of the following frequencies: 28.865, 14.345, 3.645 and 144.470 MHz.

b) The proposed times to test FAI openings are suggested to be on the full hour (h+00) and half-hour (h+30). A reason being that it will be impossible to search for a whole hour with the utmost of concentration for very weak signals.

c) For instance, FAI tests can take place on CW between 144.025 and 144.035 MHz and on SSB between 144.150 and 144.160 MHz. The reason for this selection is, that between 144.025 and 144.035 MHz, which is adjacent to the EME segment, hardly any CW traffic occurs. A segment
of maximum 10 kHz width should make it easier to search for active FAI stations.
d) FAICQ calling is proposed to be done thus:
... CQF CQF CQF de HB9QQ, HB9QQ ... The reason for this method is that it will make it clear that it is a FAI test CQ. This procedure is also used with Aurora tests, CQA has been used very successfully.
e) FAI reports to contain the following information:
... de HB9QQ RPRT 54F OTF080 EL 12 ... A report indicated with the letter F ensures that the other station realises the FAI mode of propagation. The other information is very important for final correlation of good FAI zones.

REPORTING FAI CONTACTS
All reports and results of experiences with FAI should be sent to a central point. How this is to be regulated is presently very vague. It is proposed that, initially, national organisations collect the data until such time as a permanent IARU Region 1 co-ordinator is appointed.

CONCLUSION
This article has been presented in the interest of serious experimenters and researchers. It does not profess to be complete and/or totally correct. Anyone genuinely interested in FAI is asked to contact Pierre Pasteur HB9QQ, Sunnhaldenstr 28 A, CH-8800 Duebendorf, who, while writing this article, acknowledges with appreciation assistance from John GM4HJ.

—Reprinted from VERON June 1986 and translated by John Aarsse VK4QA

NEW RADIO BAND
Commercial and private users of radio in Australia are now being offered a relatively new VHF band. The Department of Communications released the 40 MHz band last year and it is permitting repeater stations.

Companies selling transceivers for this band claim that its ground wave propagation make it superior to the higher VHF bands in rugged and hilly terrain.

COMPUTER EDUCATION
Over the next four years the Victorian Government anticipates spending $20 million developing computer education in state schools. The allocation will ensure that computer technology is made available to all primary and post-primary students in Victoria.

Computer education is now a major education priority as familiarity with computer technology will greatly enhance young people's future.

Power Supply for a VIC-20

An alternative power supply for the Vic-20 is constructed thus . . .

Being a user of a Vic-20 computer, like many others I expect, I am having power supply trouble. My supply has always got hot but this time it stopped completely (gave up the ghost). This particular unit requires nine volts AC and five volts DC.

An alternative supply was constructed in the following manner.

Using an old electric blanket transformer, I removed several turns from the secondary winding to give exactly nine volts AC. The regulator board was removed from the original Vic-20 supply and installed inside the transformer control unit.

The offending component (the regulator) is encapsulated in epoxy resin and can be unsoldered and left behind. Replace the regulator with a 7805 and use a very good heat sink.

Connect nine volts AC to the board and use the existing power supply to computer lead (removed with the board from the old Vic-20 supply). Bridge the 2.2 ohm resistor and remove the 1k resistor.

The constructed unit, not being enclosed in epoxy does not get so hot and should last longer.

At least it will be easier to service in future! No originality can be claimed for the circuit . . . just the idea!

Figure 1 — The Vic-20 Existing Power Supply Circuit (regulator chip different).

The constructed unit, not being enclosed in epoxy does not get so hot and should last longer.

At least it will be easier to service in future! No originality can be claimed for the circuit . . . just the idea!

Figure 1 — The Vic-20 Existing Power Supply Circuit (regulator chip different).

Bridge Is a 2.2 ohm resistor
Remove the 1k resistor
Use a good Heat Sink

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Power Supply for a VIC-20 Computer
Keith Rehe VK4AIO
7 Guardsman Avenue, Alexander Hills, Qld. 4161
Technology in communications has advanced so rapidly that we now rarely give a second thought to live telecasts from overseas. The same technology has revolutionised radio communications and Joe Ellis VK4AGL, of the Sunshine Coast Amateur Radio Club, says amateurs have spoken on their sets to people up to 39,000 kilometres away. Joe, in the following article which was published in NEWS PLUS, traces advances in radio communication over the past 30 years.

At 10 pm in October 1957, near the village of Tyuratam, 240 kilometres north-east of the Sea of Aral, a Russian rocket blasted off into space carrying Sputnik One. Shortly after midnight a BBC radio operator at a monitoring station near London noted an unfamiliar beep-beep-beep signal.

Direction-finding equipment showed the direction changing rapidly. Only one conclusion was possible, that the signal was coming from an artificial space satellite. The world responded with surprise and elation, according to newspaper reports of the day, to these wondrous events.

What was your reaction? I remember feeling a little uneasy by it all. Certainly I did not imagine that thousands of amateur radio operators and shortwave listeners were able to hear the spacecraft. The world responded with surprise and elation, according to newspaper reports of the day, to these wondrous events.

At 10 pm in October 1957, near the village of Tyuratam, 240 kilometres north-east of the Sea of Aral, a Russian rocket blasted off into space carrying Sputnik One.

The story of amateur radio satellite operations began in 1959 when a group in the United States constructed a device and managed to get a free lift on a rocket which blasted off from Vandenberg Air Force Base late in 1961.

Orbiting satellites carrying amateur radio gave rise to the short term OSCAR. This was OSCAR One and had operation for 22 days before decaying and burning up in the earth's atmosphere.

OSCAR Five is of particular interest to Australians as it was designed and constructed by students at Melbourne University. The project was finalised in 1966. It had to wait four years before a free launch was negotiated on a NASA rocket in 1970. The first successful command of an amateur satellite took place on Orbit 61 of this Australian designed unit.

Another amateur device of interest is OSCAR Nine. Designed and built at the University of Surrey, UK, it was launched during 1981 into a low flying Polar orbit 544 kilometres above the earth. It is a scientific unit sending radio propagation details and other information.

Russian radio amateurs have also launched their own versions. Sputnik Three to Eight were all launched together into low altitude orbits and are solar powered.

The Japanese amateurs, who have assisted with the construction of previous OSCARS recently launched their own satellite, JAS-1.

There was excitement among the international radio operator community in 1983 when OSCAR 10 was launched via a European Space Agency rocket. A previous attempt to deploy an OSCAR 10 ended in disaster when the Ariane rocket blew-up after launch, dumping hundreds of volunteers hours of work into the Atlantic Ocean.

OSCAR 10 is operating in a high altitude Molniya orbit. This enables us to communicate through this device for long periods without significant changes in the azimuth and elevation in our antenna system.

Designed for a life expectancy of seven to 10 years, it recently became affected by solar/cosmic radiation. For the technically minded, the satellite is of tristar construction and weighed 90 kilograms at launch.

President John F Kennedy said in a report to Congress in 1961: "I invite all nations to participate in a communications satellite system in the interest of world peace and closer brotherhood among the people of the world."" Some of the 16,000 amateur radio operators in Australia have taken up this challenge and are able to bypass censorship and Governments and directly communicate with other human beings on this planet, thus contributing to a more peaceful world.

---Reprinted from NEWS PLUS and contributed by John Aarsse VK4QA
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FB SERIES CABLE & N CONNECTORS

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Every year the Remembrance Day Contest is preceded by a short opening address on all frequencies by a notable personality.

This year, it was thought fitting that, due to the 150th Anniversary Celebrations in South Australia, a well-known South Australian should present this address. No better choice could have been made than the notable Australian, Sir Mark Oliphant.

Before presenting Sir Mark’s address, a little about this great man.

SIR MARK OLIPHANT
Marcus Laurence Elwin Oliphant, was born in Adelaide on October 8, 1901 and was educated at the Unley and Adelaide High Schools and later at Adelaide on October 8, 1901 and was educated at the Unley and Adelaide High Schools and later at the University of Adelaide, gaining an Exhibition of Distinction to enter Cambridge University. Here he obtained his PhD.

At the age of 34, he became the laboratory’s assistant director of research and in 1937, accepted the position of Poynting professor of physics and director of the department at the University of Birmingham. In 1943, his secondment by the United States of America was approved, where he was to work with American scientists on that deuterium bomb.

This gentleman was one of the team of scientists who discovered the ‘deuterium reaction’ that led to the development of the hydrogen bomb. During World War II he concentrated his abilities on the research of radar and atomic energy.

He has consistently opposed the use of nuclear weapons and one of his many philosophies which he quotes many times is ‘scientific discovery must be studied in relation to its use and misuse by mankind.’

Sir Mark holds many degrees conferred by various universities. He has had notable employment both in Australia and overseas, some of the positions being Director of School of Research in Physical Sciences (1950-1963) and Professor of Physics of Ionised Gases at the Institute of Advanced Studies at the Australian National University (1964-1967).

Marcus Oliphant was knighted in 1959, at the age of 58, for his contributions to science.

In 1971, he was appointed Governor of South Australia, a position he held for five years. His popularity in that state was overwhelming due to his being a public spirited and free-speaking citizen.

Sir Mark Oliphant, AC, KBE, FRS, thank you for your participation in the 1986 Remembrance Day Contest. Your words today have increased the importance of the contest.

THE 1986 REMEMBRANCE DAY OPENING ADDRESS
I am honoured to be asked to speak during this Remembrance Day Contest though I think that I belong to a generation which knew nothing of the techniques or achievements of radio as exists today.

When I was a youth, radio amateurs used spark transmitters, Morse code and crystal detectors. Such enthusiasts did not realise that they were pioneers of the solid-state electronics used by both professionals and amateurs now. I shall mention this again later.

In the laboratories of the Department of Physics of the University of Adelaide, we used crystal receivers to listen in earphones to the local radio station which transmitted time signals and Morse code messages to ships in the neighbourhood. Then just after the First World War, the first De Forest Audion valves were received. These little tubes contained gas, which glowed when in use, and the tungsten wire cathodes did not last long. Nevertheless, it was with one of these that I first heard music in earphones, which had been transmitted by an American ship then in port.

Professor Kerr Grant was away on study leave so he missed this thrilling experience. Shortly afterwards the hard vacuum three electrode valves appeared.

George Fuller, my fellow honours student, invested in a complicated six valve receiver with successive, separately tuned radio frequency amplification components, which had to be tuned by turning six separate knobs.

I wondered then, and I still wonder, how anybody ever had the patience to use such a device. In those days, there was no mention whatever of radio in the lecture given in the Department of Physics.

Although the electro-magnetic theory, that is Maxwell’s equation formed the backbone of part of the course.

When I left Cambridge in 1937 to become the Professor of Physics in Birmingham, the whole of the university, including the laboratories of the Physics Department, operated on direct current, which was generated in the Department of Mechanical Engineering, with reciprocating steam plant, so in the laboratories there were no experiments using alternating current and consequently, no electronics of any kind.

An honours graduate in physics at the end of his course knew nothing of electronics. We, who were senior members of the Cavendish Laboratories, where Appleton, Radcliffe and others had done historic work on the Heaviside layer of the upper atmosphere and used electronics extensively in their investigations, had been inducted into the secrets of radar before the war.

When war broke out, we were immediately assigned to war-work in that field. This was not a simple task in my physics department, where no electronics had been taught. The shortest wave length available using the vacuum valve known as the Micro-pup was about 50 cm. This was not suitable for air-borne radar. So I was assigned the problem of how to generate pulses of radio power with a wave length of 10 cm or less. Having visited the various manufacturers of radio valves, I decided that we needed a team of people able to think in terms of first principles, rather than the practice of radio as it was at that time.

It seemed clear to me that it was essential that the resonant circuit of the oscillator for these very short wave lengths must be an integral internal part of the system rather than external to an electronic valve the size which could never be reduced greatly and still give appreciable power.

So we began with a continuously evacuated klystron which produced about 600 watts of radio frequency power and gave good echoes from aircraft and ships.

Doctor Sayers was the keyman in that demonstration. The receiver was a silicon crystal which was used in a super heterodyne circuit, converting the radio frequency to that used for early British television, the circuitry for which was available commercially.

It was the diode to which Bell Telephone Laboratories added a third electrode and the transistor was born.

Meanwhile, Randell and Boot produced the concept of a ring of oscillatory circuits surrounding a cathode at the centre of a magnetic field, the so-called cavity magnetron. He and his colleague Boot developed this to give many kilowatts of radio frequency power in pulses at a wave length of 10 cm.

After some modification by Sayers, this became the standard technique in late wartime radar. It is ironic perhaps, that the greater use of the magnetron today is in the microwave oven.
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THE COLLINS S LINE

The Collins 75S receiver was produced in two versions. The 75S-1 and the 75S-2. The 75S-1 was designed for extra frequency coverage with an additional 14 band positions. The original price of the 75S-1/2 receiver is not known (perhaps someone can fill me in). The receiver was released in 1955. After this, Collins produced their first SSB transmitter, the KWS-1.

However, very few of these were ever imported into Australia due to rather stringent import restrictions that applied then. No doubt, to the very high price. In those days, the average Australian amateur thought himself very restricted that applied at that time and also, no doubt, to the very high price. In those days, the average Australian amateur himself thought himself very lucky if he owned a war disposals receiver such as an AR88 and either a modified surplus transmitter, or a home-built unit, perhaps incorporating the latest Geloso VFO unit.

Collins produced the first amateur SSB transceiver in 1957, the KWM-1. This covered the 20, 15 and 10 metre bands with a pair of 6146 tubes in the final.

It was in 1959 that the Collins S-Line was released with the 75S receiver and 32S transmitter which were imported into Australia in small quantities.

THE COLLINS 75S RECEIVER

The 75S receiver was produced in two versions, the "1" and the "2". These were double conversion designs with a tunable first IF at 3.155 to 2.955 MHz and the second IF at 455 kHz with a 2.1 kHz filter for SSB reception. All Collins receivers from the original 75A on used a permeability tuned filter for SSB reception. Among Collins receivers from designs with a tunable IF. This design was to set new standards in stability and accurate frequency calibration.

Soon after this, Collins released their mechanical filter, which was able to produce a flat top, steep sided selectivity curve which was almost impossible to achieve with normal tuned circuits. These filters made the generation and reception of single sideband much simpler and efficient. The last of the 75 series, the 75S-2, is still looked upon as a classic in the design of amateur SSB receivers and it was released in 1955. Soon after this, Collins produced their first SSB transmitter, the KWS-1.

THE COLLINS 32S TRANSMITTER

This is a matching transmitter for the 75S receiver described above. Almost identical in appearance to the receiver, the 32S used the same type of VFO and mechanical filter as the receiver. The final stage used a pair of 6146 tubes to give Collins 100 watts and 200 watts output. Collins were among the first to employ negative RF feedback across the final stages to reduce inter-modulation distortion. Japanese manufacturers did not discover this until Kenwood introduced it in the TS-820 some 18 years later! With the same VFO and IF set up, the transmitter and receiver could be coupled together to transceive. This worked very well compared to some of the early Japanese efforts which did not quite come-off. The 32S required a separate power supply with 800, 275 volt HT plus 6.3 volts AC and -60/60 volts bias.

The Collins 32S-3 transmitter, which did not quite come-off. The 32S required a separate power supply with 800, 275 volt HT plus 6.3 volts AC and -60/60 volts bias.

THE COLLINS 30L-1 LINEAR AMPLIFIER

This is the companion linear for the above receiver and transmitter combination. Also usable with the Collins KWM-2 transmitter to be covered in a later article.

Fully self-contained with power supply, the 30L-1 uses four 811A tubes in parallel. Rated at 1000 watts PEP output with 70 to 100 watts of drive, but actually capable of somewhat higher power. Power output 700 to 800 watts. This amplifier features the usual Collins superior design with negative RF feedback and automatic load control. A very desirable linear for any amateur application. Price when new (1972) was $375 but today would be worth around $1000 if you can find one.

NEW ABC RADIO NETWORKS

FM transmitters at 42 sites in Queensland and Western Australia will begin broadcasting programs on the ABC's new Second Regional Radio Network in the first half of 1987.

The first phase of the new network, costing over $1.5 million, will benefit 40,000 people in Queensland and 17,000 in Western Australia.

Another 300 sites around Australia are to be included in the network over the next 10 years.

FIBRE OPTIC NETWORK

Telecom Australia plans to lay a 2 700 km optical fibre link between Perth and Adelaide by 1989. This is part of a national optical fibre program to connect all Australian mainland capital cities by 1992.

The Perth-Adelaide link will be the world's longest link without intermediate terminals.

Later links will be Adelaide-Darwin and Adelaide-Brisbane, with a spur line connection to Melbourne and Sydney.

A fibre optic loop for the Melbourne central business district is nearing completion and a similar loop is being considered for Sydney.

The optical fibre links consist of hair-thick strands of extremely pure glass and are capable of carrying all types of telecommunications traffic.
These transceivers have been released as updated replacements of the TR-7950 series, two metre FM transceivers. The TR-7950 was re-released in the July 1983 issue of CQ with new features.

The new transceivers retain all of the desirable features of the old models while introducing several updates that again put Kenwood into the lead in transceivers. Perhaps the outstanding achievement is putting 70 watts output (the 2570A) into a mobile size package.

The TR-2570A is rated at 45 watts output which is the same as the original TR-7950. This review will concentrate on the higher powered model.

**TM-2550A/2570A DESCRIPTION**

These two metre FM transceivers have identical features except for the difference in power output. Because of this, the higher powered version is slightly larger because of the increased size of the final amplifier heat sink. Overall dimensions are 180 x 80 x 215 mm (WHD), for the 2550A, and 250 mm the 2570A. Weight is 2 and 2.35 kilograms respectively. In addition to the larger heat sink, the 70 watt model also has an in-built cooling fan which is thermostatically controlled.

Full coverage of the two metre band is provided in five kilohertz steps. Required frequencies are selected by entering them on the keyboard, then transferred to one of the memories. Memories are selected by the large right “tuning” knob. Any one of the memories can be designated a priority channel with the receiver sampling this every five seconds and sounding a loud double beep if the channel is active. Also, any of the memories can be selected to be skipped during the memory scan.

The LCD display has been greatly expanded on the new transceivers. The old TR-7950 used an LED S-meter and LEDs to indicate reverse repeater operation, the centre tuning indicator and the priority channel selection. These are now all incorporated into the LCD display.

The S-meter is particularly good with 24 calibration points as against only seven on the old 7950. Just how the S-meter actually works out in practice will be covered later in the test section. However, the greatest update in the new models is the list of options. As our review transceivers were not actually fitted with any of the list, we can only describe them and then leave the choice to you.

First is an option that will be taken up by amateurs with impaired sight, the VS-1 voice synthesiser. At the touch of a button, this will announce the frequency, memory channel selected as well as information on the optional call labels feature this in a translucent green — very nice.

Received audio quality from the larger-than-average internal speaker is quite good. The speaker is mounted in the top of the cabinet, good for mobile operation so long as it is not firing up the underside of the dashboard. With a good quality external speaker, the receiver audio is exceptionally good.

Transmit audio was checked with two microphones, the supplied MC-42S hand-held with up/down scanning buttons and the MC-60A desk type. The hand-held produced crisp clear audio while the extended response of the MC-60 was reported as “broadcast quality.” I am pleased to see that Kenwood have fitted a now-standard eight pin microphone connector which is compatible with other current models. The locally supplied earlier model, the TR-7950, had, for some reason, a six pin connector which caused many compatibility problems. Strangely though, the Trio model of the same transceiver had an eight pin connector.

Transmit tests were carried out over extended periods to check retention of output power. Many transceivers tested show a falling-off of power after a short time. Both of these transceivers delivered consistent power over several hours of testing.

Operation was also checked at supply voltages below 13.8 volts. Power output fell slowly down to about 10 volts and at this point, the 45 watt model was down to 20 watts, and the 70 watt unit was down to 35 watts. Below this voltage things died rather rapidly.

**ON TEST**

The following test equipment was used to produce the figures obtained during these tests.

*Yaesu YP-150 terminating RF power meter, Marconi TF-957/1 terminating RF power meter, Marconi TF-995A/5 signal generator, Daven audio power output meter, AWA F242A noise and distortion meter. All tests were carried out with a regulated 13.8 volts applied to the transceivers.*

**Transmit Power Output**

The two transceivers were checked with the following results.

<table>
<thead>
<tr>
<th>Mode</th>
<th>TM-2550A</th>
<th>TM-2570A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power/O/P HIGH</td>
<td>97 watts</td>
<td>4.5 watts</td>
</tr>
<tr>
<td>Power/O/P LOW</td>
<td>9.7 amps</td>
<td>3.2 amps</td>
</tr>
</tbody>
</table>

Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley, Vic. 3150
It is noted that the low power output setting is adjustable over a fairly wide range. The above figures were taken with the factory set power and no attempt was made to alter this.

**Receiver Tests**

The S-meter was checked first. The new LCD bar-graph has two indicators per S-point, with calibration points at 1, 3, 5, 7, and 9. There are then six indicators to show S9+.

This works out to 2 dB per S-point or about 1 dB per l.

This again shows that S-meters are very different on VHF transceivers compared to HF equipment. As many signals are obviously stronger than 6.3 uV, this strength indicator is only useful for relatively weak input levels.

Receiver sensitivity was checked at 146 MHz with the following results.

<table>
<thead>
<tr>
<th>RF INPUT</th>
<th>SINAD</th>
<th>S/N RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1 uV</td>
<td>20 dB</td>
<td>15 dB</td>
</tr>
<tr>
<td>.2 uV</td>
<td>22 dB</td>
<td>18 dB</td>
</tr>
<tr>
<td>.5 uV</td>
<td>27 dB</td>
<td>24 dB</td>
</tr>
<tr>
<td>1.0 uV</td>
<td>35 dB</td>
<td>30 dB</td>
</tr>
</tbody>
</table>

Full quieting was reached at about 2 uV with a noise output of -44 dBm.

Receiver audio output was checked by feeding the extension speaker output to an eight ohm terminating power meter with the noise and distortion meter bridging this.

Max Power

Output 3.25 watts 28 percent distortion
2.00 watts 1.5 percent distortion
.50 watts 8 percent distortion

These figures are rather better than the specified 1.5 watts at five percent distortion, but I still think that a mobile transceiver of this type should have at least five watts output at below five percent distortion.

Received current drain was checked. The 2550A was .6 amps squelched to .8 amps with one watt of tone output. Relative figures for the 2570A are .8 amps and 1 amp.

Frequency stability and accuracy for both transmitter and receiver were checked and found to be better than 100 Hz under all conditions.

**CONCLUSIONS**

These are both excellent transceivers and are certainly worth consideration if you require a high powered, two metre FM rig. Their somewhat large size perhaps makes them more suitable for a base station operation rather than for mobile use. Kenwood produce a range of compact FM transceivers that will fit into the limited space available in modern cars. If you are trying to decide between the 45 and 70 watt version, I would recommend the higher power version because of its superior final stage cooling. With the larger heat sink and built in cooling fan, it actually runs cooler than the lower powered version.

Thanks to John Hill of Emtronics, Melbourne Division for the loan of the TM-2570A and to Kenwood Electronics Australia Pty Ltd, via Eastern Communications for the loan of the TM-2550A.

**EVALUATION AND ON-AIR TEST AT A GLANCE of the Kenwood TM-2570A...**

<table>
<thead>
<tr>
<th>Serial No 7031506</th>
</tr>
</thead>
</table>

**APPEARANCE**

Packaging

** Single canal full of foam box insert.

Weight and Size

** Not the smallest or lightest. For mobile use you might prefer one of the smaller units.

External Finish

*** Very well finished. Although the all black colour scheme is a bit sombre.

Construction Quality

*** Well put together with good quality components.

**FRONT PANEL**

Location of Controls

** There are 19 knobs or push buttons, plus a 16 button keyboard. Quite a feat to fit them all in.

Size of Controls

** Due to the above, buttons are small and hard to operate, especially under mobile conditions.

Labelling

*** With the fully illuminated front panel, all labelling is very clear and concise.
JOTA 1986

Greetings once again to all and especially to anybody who has decided to, or been asked to, operate a JOTA station this month.

The 28th Jamboree-on-the-Air will be held over the weekend of October 18-19, 1986, beginning at 0001 hours Local Time on the Saturday. JOTA will conclude at 2359 Local Time on Sunday. Stations may operate for all, or any part of this period.

Either you have everything under control or, as in most cases, you hope that all will be okay on the day. We know any effort to assist will be much appreciated. Remember these annual events that happened previously for us are still new to the next generation.

If you can go portable at a JOTA location, even though you may not stay long, it is the kind of public relations exercise that is good for both participants.

This year, the Scout and Guide Movement has decided to be the party to initiate a station. It is hoped they will have success and not receive too many "knock-backs" from potential operators.

One highlight of the day will be the Chief Scout/Governor-General's broadcast from Canberra. (Dural station will avoid last years failure by a VHF relay link if required owing to poor propagation). Reliable VHF communication is good over the mountains and into VK1.

Do not forget, the JOTA station fills in the log and report sheets, supplied by your Scout/Guide Leader. You do not have to fill them in but they are necessary for final assessing of the success of the JOTA activities.

During discussion regarding the day, ask how many guests you can expect and if a leader will always be present. It is possible always require a relay link if required owing to poor propagation. Reliable VHF communication is good over the mountains and into VK1.

All pipes over six inches in diameter must have the words "Large Pipe" painted on it, so the contractor will not mistake it for a small pipe.

Flanges must be used on all pipes. Flanges must have holes for bolts quite separate from the pipe or a short pipe.

When ordering 90, 45 or 30 degree elbows, be sure to specify right hand or left hand, otherwise you will end up going the wrong way.

Be sure to specify to your vendor whether you want level, uphill or downhill pipe. If you use downhill pipe for going uphill, the water will flow the wrong way.

All couplings should have either right hand or left hand threads, but do not mix the threads, otherwise the coupling is being screwed at one pipe, it is being unscrewed at the other.

Contributed by Bill VK3CFL, via Bruce Bathols VK3UV

SHARE YOUR STORY IN AR...

IN eti THIS OCTOBER,

- The lure of tropical bands
- Radio in Macau
- A career in electronics
- HOTOL: a boost for ESA
- MIDI, the computer music link

- Plus news, reviews, projects and more!

Electronics Today International

SPECIFICATIONS FOR CONSTRUCTING PIPE FOR A FOREIGN GOVERNMENT

All pipe is to be made of a long hole, surrounded by plastic or metal centred around the hole. All pipe is to be hollow throughout the entire length. Do not use holes of different length than the pipe.

The inside diameter must not exceed the outside diameter, otherwise the hole will be on the outside.

All pipes over two miles in length must also have the words "Long Pipe" painted in the middle, so the contractor will not have to walk the entire length of the pipe to determine whether or not it is a long pipe or a short pipe.

All pipes over six inches in diameter must have the words "Large Pipe" painted on it, so the contractor will not mistake it for a small pipe.

Flanges must be used on all pipes. Flanges must have holes for bolts quite separate from the pipe or a short pipe.

When ordering 90, 45 or 30 degree elbows, be sure to specify right hand or left hand, otherwise you will end up going the wrong way.

Be sure to specify to your vendor whether you want level, uphill or downhill pipe. If you use downhill pipe for going uphill, the water will flow the wrong way.

All couplings should have either right hand or left hand threads, but do not mix the threads, otherwise the coupling is being screwed on one pipe, it is being unscrewed at the other.

Contributed by Bill VK3CFL, via Bruce Bathols VK3UV

SHARE YOUR STORY IN AR...
VISIT TO ALICE SPRINGS

During the past month I made a trip to the Northern Territory, and whilst in Alice Springs I had the pleasure of meeting some of the members of the Alice Springs Radio Club. On the appointed night, we assembled in the luxurious lounge of the Sheraton Hotel. There met me were the President, Terry VK7TM, Secretary, Peter VK8ZLX, Jeff VK8GF and Tim VK8KTM.

Most of the discussion was VHF orientated naturally! Jeff VK8GF and I had known one another for some 25 years and some of our early days exploits on one metre with super-regenerative equipment caused smiles and interested comments from the other listeners. Other subjects dealt with included beacons, repeaters, QRM from other services at repeater sites, and its likely promise of good contacts in the future.

The Alice Springs boys are well aware that their unique position geographically means they will be much better placed to work the two metre contacts in particular and they will be going all out to provide those contacts around Australia. Improved antenna systems and increases in power will be helpful. There are some 70 50 MHz and stations with reasonable power are likely to be operating from there as well.

With the likelihood of another extremely good solar cycle, it seems likely that all bands will see a lot of traffic. There is good potential for two metre contacts, the Alice Springs boys have certainly got their act together and I hope the rewards will be contacts both ways.

It was certainly a great evening spent with some very fine guys and one to be remembered for a long time. On leaving, they presented with large Australia QSL card depicting Ayers Rock and signed by all four attending. I shall treasure that gift. Thank you.

ROSS HULL MEMORIAL CONTEST

During my discussions with the Alice Springs boys, the matter of the Ross Hull Contest was included as I was anxious to obtain the opinions of a wide group of operators. I took with me the details of what had been done. Asked if the Contest this year, in the light of experience and comments received from last year.

Ross Hull Contest was known as the 1000 mile (1600 km) fun, but now it seems that the ground swell of opinion that two major factors were preventing operators from showing enough interest to submit a log. They agreed there was little doubt that there are many stations operating during the summer period and giving out numbers and who never submit a log. (VK8KLP has a list of 404 call signs on six metres alone for last summer).

Whilst it was agreed every encouragement should be given to amateurs to construct or obtain equipment for the UHF bands, there are many amateurs who, for a variety of reasons, may never get beyond the 70 cm band. If the Contest was limited to the 52, 144, and 432 MHz bands (at least for the time being) it is possible that the already high level of participation could result in the log return like that of the 1960s, when development on the bands above 432 MHz had not been very great. Those able to operate 1296 MHz and above will find the mode natural, but the Contest is to survive then something probably to be done to increase more people too have a chance of a certificate and hence enter a log.

In the Pilot Contest over seven days score then even more operators are given a chance to be in the running. Not everyone can spare three solid weeks before the transceiver.

On the last day Ross Hull Contest did not want to pre empt what the Contest Manager may be deciding, but last year's one point per contact was judged a disaster! Short distance contacts and very long distance contacts on six metres are certainly worth more than one point. Why not two points up to 1000 km, 1000 to 2000 km one point, over 2000 km two points? On 144 MHz, up to 500 km two points 500 to 1000 km five points, over 10 km 10 points, 432 MHz, up to 500 km four points, 500 to 1000 km 10 points, over 1000 km 15 points. For contacts with overseas stations: 52 five points, 144 10 points, 432 15 points. This would make a worthwhile persevering with that ZL or FK contact even if it takes a while to make it. And what would be wrong with offering an extra 10 points for every contact made during the Contest period? …

OVERSEAS ON SIX METRES

CO ham radio for June 1986, from Japan (courtesy VK6RM). Shows we are usually in the low part of the cycle. On 50 MHz the only stations being worked from Japan have been H1J, 2, 3, 4, and 5 from Korea, VK6 KOM, XII, X, XLN, and XNP from Malaysia, will be on 50 MHz which could be another country to look for should six metres open up to the north.

B4YRC, in China, has apparently been hearing two metre SSB contacts into Japan starting last May. One can envisage the dog-piles if he is a lone operator!

FER SPORADIC E

Most years there is a period of improved six metre conditions during June and July, and this year appears to have been no exception. Although I was away for quite a while during that period, news of contacts is filtering through. Not a lot has taken place from the VK5 end except on two metres between VK5 and VK3.

VK72IF was reported working VK2KJ around 0530 midday on 142 MHz. From VK50XIC, 13/17 around midday local time, strong signals, probably others in VK2 worked him as well; ZL television heard in VK5 strongly for five minutes around midday local time. All in all it seems there should be some increase in contacts via Es as we begin to approach the summer period once more. Once again I say to all to be aware of the potential for two metre contacts during periods of high Es as a
this very low part of the sun spot cycle. More stations will also be trying 70 cm this summer and
gain there will be a number of stations going out
dateable over the Christmas/New Year period,
which leads to more possible contacts. I am
sure the summer of 1988/89 will be a very exciting
one on VHF.

VK5LP is secretly praying for the hot weather to
come soon in the hope the two metre rotator will
become unfrozen. At the moment it is stuck
pointing to Mount Gambler and defies efforts to
move it. Being over 70 feet (21 metres) off the
ground does not help to improve matters! Might
have to be content with just working ZL this year!
The Newcastle Beacon, VK2RHV, on 52.325
MHz was available to VK5 for about half an hour
today (18/6 2330) peaking to S3, but no stations to
work. Channel 0 also there at sufficient strength to
be readable. Sydney Beacon, VK2RSY, on 52.420
MHz was very weak.

One could speculate at times as to the potential
for contacts if amateurs were permitted to run the
same power as Channel 0. It is an interesting
exercise when in the shack doing other things to
monitor Channel 0. Some days it is there for hours
going in and out of the noise, occasionally
peaking to S9, etc. Recently, I observed it very
strongly around 0100 one morning for more than
half-an-hour at a level good enough to produce
colour. This would have had to be Es. The
occasional lifting in strength observed on other
occasions could be due to meteor pings. It has
often been said that six metres never closes, only
operators stop. That statement may be hard to
actually prove, but there is evidence the band is
open far more often than we give credit. That is
why it is such an interesting band and worthy of
more use.

FROM THE PAST
Being of an inquiring nature and interested in
items from the past, I was looking through some
old QST magazines and in May 1939 came across an
article "Exploring Below One Metre" which gave
details of practical equipment for operation on 325
MHz. An RCA 955 valve was used as a super-
regenerative detector sitting in a specially
made inductor. Satisfactory contacts were being made
over five miles (8 km).

In the June 1940 issue the following UHF
Records existed: 56 MHz: W1EYM to W6DNS on
22/7/1938, 2500 miles; 112 MHz: W9XYT to
W9XYX on 7/10/1939, 160 miles; 224 MHz:
W1AV to W1KL on 27/4/1940, six miles. However,
on 28/4/1940 W6BCX worked W6OIN to extend the
112 MHz range to 200 miles!

December 1950 issue was reporting interna-
tional DX on 50 MHz and distances of 1200
miles on two metres and 200 plus on 420 MHz.
The USA record for 1200 MHz was 37 miles and
this was bettered in England by GBDD and G3GC,
who worked 75 miles. The same two had worked
46 miles on 2400 MHz, but were unable to attack the
USA record of 150 miles due to lack of suitable
locations.

Since those early days, distances on all bands
have been lengthened many times and records
continue to be set, but it does not hurt to become
nostalgic sometimes!

I also have some copies of a magazine called
CO — a magazine issued in the interests of
Australian amateur radio, dated 1928 and 1929.
These were published each month by the New
South Wales Division of the Wireless Institute of
Australia and distributed free to its membership.
The Editor was J M Bristow. President of the
Division was E G Beard with W R Felton as the
Secretary. They carried notes about the amateurs
from various districts of Australia, technical news,
and information including new products, WIA
notes on the Federal Convention, also some radio
theory, plus articles on amateur radio
personalities. Quite interesting!!

CLOSURE
Before the Editor starts lifting his pen to erase any
of this text I will close off for now. It has been a
difficult month to fill the column, having been
absent for four weeks did not help and the winter
doldrums usually add to the problems. Activity
should pick up soon and there should be more to
report.

This months thoughts: Why does a heated
argument create a chilly atmosphere? and
Sometimes a man gets a reputation for wisdom
simply because he does not have enough money
to make a fool of himself!!

—73 The Voice in the Hills

MAKE YOUR OWN LABELS
Rob Abel VK2ERA,
106 Derwent Street, Glebe, NSW. 2037.

A neat and simple way to tailor your own labels
for home-brew gear is as follows:

Using ordinary domestic self-adhesive vinyl* (the
type used to cover library books, or line
kitchen shelves), rub on your chosen label with
rub-on lettering transfers, ** which are readily
available in a wide variety of sizes, colours and
styles.

Next cover the lettering with another piece of
clear self-adhesive vinyl (with the backing
removed), thus making a "sandwich" in which
the lettering is the filling.

Cut the label to the appropriate size and
shape, peel off the backing of the bottom layer
and smooth carefully into the required position.
This makes a very neat and tidy label and as
the lettering is covered it will not rub off with
use.

The label colour is limited only by the colour
of the material available.
For instance — on black painted articles
clear contact is used for both top and bottom
layers with white lettering. I used this method
on a small home- brew transceiver with very
satisfying results.

* Contact paper is one type of self-adhesive vinyl.
** Letraset, etc.

BUSHFIRE NETS
The New South Wales Bush Fire Council has
begun installing a series of repeater networks.

The first, at Mount Gibraltar, near Bowral, uses an
Australian-made 50 watt talk-through repeater
with an output on 467.725 and receive on 458.225
MHz.

Five bushfire control centres, with desk-top
tagger base radio systems, now use this repeater
for inter-communication.

The system is called Strategic Radio Network.

During major bushfire operations they provide an
inter-service link between the Bush Fire Council,
National Parks and Wildlife, Forestry Commission,
Police, Ambulance and the Army.

AMATEUR RADIO, October 1966 - Page 35
How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic 3138

It is from good authority that the whole DXCC criteria for their prestigious awards program could be dramatically changed.

I personally feel that this could be for the better, but please John W4FRU and your committee, don’t take the attitude of throwing all the old paperwork in the air and saying: “Let’s start again!”

Many amateurs from all continents are members of the ARRL and want to take advantage of the ARRL DXCC. It would be prudent to seek input from these members, many of whom have attained similar DXCC country totals — some even being on the Honour Roll.

When problems arise and arrogance, vitriolic remarks, and belittling a society’s awards becomes a talking point across the amateur spectrum, something constructive should, and must, be done promptly.

The ARRL is renowned for its impeccable record of assistance to the fraternity and its Awards Program is the criteria for all countries, so please Mr Chairman of the DXCC Advisory Committee, amend the criteria constructively, remembering that if not all DXers, amateurs, have struggled to attain their DXCC standings by spending countless hours chasing elusive countries and trying to get their calls recognised over the associated klangfarbenmelodie, when coming across that rare country where a DXpedition has gone, usually at great expense to the participants. Or, maybe it could be a lone amateur in an isolated location wanting a friendly chat.

Next comes the considerable expense of obtaining the valued card, and the accompanying frustration which accompanies such an exercise — an accepted part of the hobby!

Mr Chairman, you are respected and renowned for your clear thinking — please give this problem considerable thought before any constructive changes are made as your decisions will stand for decades to come.

Cocos (Keeling) Islands — VK9

A much sought after QSL confirmation from one of Australia’s possessions that consists of two atolls, comprising 27 small coral islands, with an all up area of (5.5 square miles) 14 square kilometres. This outcrop is located at 12.01 degrees east and 96.50 degrees south — the same altitude as Darwin — and approximately 2,250 kilometres north-west of Perth. Of interest, the highest point is no more than six metres above sea level and it enjoys a hot climate that varies between 22 to 32 degrees Celsius complimented by a rainfall averaging around 2,000 mm. The climate could be considered unpleasant in the December — February period of the year for the 410 Cocos Malays and 220 Australian inhabitants, due to the humidity and rainy season.

The main islands are named West and Home Islands, with other larger coral islands being called Direction, South, Prison, Horsburgh and North Keeling. Probably each one has its own history and the locals have a name for them all, as they are all regularly visited to harvest the coconuts, which are in abundance on the islands, which are shaped in a horseshoe format. Within the formation is an idyllic lagoon, approximately 16 by 10 kilometres in area and varies in depth to a maximum of seven metres of bright water, coloured from a bright aqua to a dark green. Outside the perimeter of the horseshoe islands, the Indian Ocean can vary in depth to many thousands of metres.

West Island is the main administration area, containing an airstrip, offices, meteorological station, the homes of government personnel, and a school that covers from pre-primary to secondary and is staffed by the West Australian Education Service.

Home Island, is occupied by most of the Cocos Malays, descendants of those who were brought over when Captain John Clunies Ross, a Scottish seaman, arrived two years after its first habitation by Alexander Hare in 1925.

Hare and Clunies Ross both laid claim to the area, even though the North Island was discovered by the British sea captain, William Keeling of the East India Company in 1609. Hare was defeated in his bid for ownership and left for Java six years later.

Further history of the island group indicates they were annexed to England in 1857 and in 1886, Queen Victoria granted all land above high water mark to the Clunies-Ross family who nurtured, cultivated and increased the plantations. It was purchased from John Clunies-Ross and his wife Daphne, after five generations of the families rule, for $6.25 million by the Australian Government. John and Daphne, now live in Perth. Many amenities are provided on the islands, including a small but modern equipped hospital, with one resident doctor and two nursing sisters. In attendance, a community radio station (VKW), many clubs and a well stocked grocery store which is replenished on a weekly basis. Produce including fresh fruit and vegetables are brought to the islands by a charter aircraft which also brings the mail. The arrival of this aircraft is the event of the week!

Surface mail, parcels and other hardware are brought in by sea, generally every six to eight weeks.

Amateur radio operation is inconsistent, unless one of the employees has to have an amateur licence. Over the past years there have been many operators heard from this tiny, much sought after outpost. Some Royal Australian Air Force air crews, such as Alex VK9YA and Paul VK9YB, on stopovers during reconnaissance flights across the Indian Ocean, and individuals such as Frank ex-VK9NYG, have changed the status from 151 to the 51st most wanted country on the DXCC ladder and even the Federal QSL Manager, Neil VK6NE, has done a stint of operating, giving a new country to many DXCC enthusiasts. Amateur operators have to be cautious and considerate in the the amount of power they use, as high power, even within the terms of their licence, can cause BCI, the lifeline of community relations in this confined area.

One, if not the first to initiate the the VK9 Cocos...
prefix was VK9AJ in 1956. His QTH was on Direction Island, however it is impossible to list all operations from this area.

So when you hear VK9Y., call and say you know a little of the area he or she is operating from, provided the operator has not yet been called, and they are in the middle of a dog-pile!

In mid-June, Bharathi VU2RBI, a YL operator and Subramanyam VU2WSN, intercepted a Mayday call on 40 metres. They contacted Bruce HP3YM/MM, on board the vessel Yathí with a crew of four. The vessel was in trouble and the VUs arranged for fresh water, food, medical supplies and rescue by the Indian Navy. All concluded happily and NIAF is discussing recognition for the above mentioned operators and their help for their assistance.

The Indian Government has agreed to assist and subsidise the setting-up of amateur radio centres along the Indian coastline to assist if necessary in a disaster and to fit into the country's Natural Disaster Master Plan. They hope to increase this support throughout the country.

Praise must be given to this Government for their recognition of the part well-trained volunteer operators can play in emergency communications if the need arises.

Information from any operator who can assist with information on the whereabouts of Art ex-ZDlFG, who operated from Njala in 1958.

This information is required by Bill VK1WB, for confirmation of two phone contacts. All replies will be appreciated at Bill's new QTH which is: 8 Eacham Avenue, Paradise Lakes, Qld. 4126. Australia.

The co-operation of overseas magazines and DX news sheets would be appreciated.

AMATEUR RADIO TO THE RESCUE — AGAIN

In mid-June, Bharathi VU2RBI, a YL operator and Subramanyam VU2WSN, intercepted a Mayday call on 40 metres. They contacted Bruce HP3YM/MM, on board the vessel Yathí with a crew of four. The vessel was in trouble and the VUs arranged for fresh water, food, medical supplies and rescue by the Indian Navy. All concluded happily and NIAF is discussing recognition for the above mentioned operators and their help for their assistance.

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ST PETER 1 ISLAND

This is not far from mainland Australia, but has been rather remote with communications for the Meteorological Station staff, when they have had to pass their weather observations back to the mainland.

Not now, as new telephone circuits have been installed that will be relayed by Australia's own AUSSAT satellite. This system is known as ITERRA (an aboriginal word meaning 'be quick').

ITERRA will link the island with voice and data access to anywhere in Australia via Telecom's switched telephone system.

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MOHELI ISLAND

A new one for the too-hard-basket probably 510A was expected to be operational from this island in July. The island is located in the Mozambique Channel.

According to research, it is apparently a part of the Comores group, but it is claimed by Tanzania, thus the 51 prefix which is within their allocation and it could be a possible for being in excess of the 250 mile radius as laid down by the ARRL DXCC Rules.

It is one of those that we will have to work first and worry later about because the examination of claims and relative paperwork as to the authenticity of the Italian operators allocation of a call sign, could take a considerable time.

Pribilof Islands

It is unfortunate to report that the issue of the Pribilof Islands is causing some harsh words to be written by Dan Robbins KL7Y, President of the Alaskan DX Association (ADXA). In 1983, the ADXA requested the ARRL to add this island group to the DXCC Countries List by virtue of point 2 of Countries List Criteria. After two years, the DX Advisory Committee voted for an acceptance of these islands as a new country. Unfortunately, the Awards Committee of the ARRL were persuaded not to add this to the DXCC list.

There seems to be no rhyme nor reason to the non-allowance considering the Advisory Committee’s advice. Why have a volunteer committee and not take their advice? In other words, it is a waste of time for all parties concerned, particularly when volunteer labour is getting harder to come by.

Space does not permit the full context of Don’s letter to be reprinted but could it be another 4U1VIC debacle repeating itself. Let us hope not, but hold onto those Pribilof cards in the interim, if you were lucky enough to make the grade with an entry in the log at the time.

CHINA

BYSOH, was due to commence operation on August 20, and BY5HZ is scheduled to send RF up the coaxial cable this month. At the time of writing these notes, unfortunately no QSL information is available, but it is nice to see more BY stations participating in the hobby.

John Cieh, the Chief Operator at BY4AOM, is assembling a 2 kW linear amplifier. John is receiving much assistance from Tom Wong VE7BC, the person, who in my opinion deserves complete recognition for getting BY back on the air. Tom still makes regular trips to China.

BY4AOM is QRV on both 20 and 15 metres, frequently looking for VK stations.

Any amateurs visiting China are made most welcome as guest operators at many of the amateur radio stations such as, BY1PK, BY4AA, BY4AOM, BY4RA, BY4RB, etc.

Further information may be obtained by sending three IRCs and a self-addressed envelope to Bob Winn, Editor, QRZ DX, PO Box 834072, Richardson, Texas, 75083, USA. Endorse the envelope, “BY Station Information.”
UNUSUAL PREFIXES
You were not hearing things: as S9JWL and LG2SL were legitimate CW and SSB calls being aired by the Norwegian Handicapped Radio Amateur Club. They were operational from Morokulien in July.

UNICEF
The UNICEF "gang" planned an operation from Godavari, in Nepal, using the call sign of Father Moran 9N1MM. The operation was to be during the first week of August. It is said that 10N1MM, or Moran or his Manager on this one but direct or via the bureau to the operators instructions.

AMDEEE
Another new prefix and suffix was due to be aired from Morokulien. This is 9N1MM, possibly from the entry into Spain into the ECC. Special calls from various parts of Europe with special OSL cards were scheduled as follows:
- 9N1MM: PO Box 700, Argentaria, Spain.
- 9N1MM: PO Box 2071 cp, 50080 Zaragoza, Spain.

MOUNT ATHOS AGAIN
Well known DXers, 10DJD, 10JK, 10ER and 10GQY attempted to operate from Mount Athos last month, using the prefix 9N1MM. They were progressing favourably with the Greek authorities and were objected and the whole project was aborted.

Incidentally, there seems to be a jinx on operations from this area. Perhaps, as one of the prefixes is the same as that of a well-known DX station, perhaps it is not so surprising that many attempts have failed. It is interesting to note that, although the legal system and official language is Portuguese, most of the inhabitants speak Cantonese.

BITs AND PIECES
The 4U1VIC controversy is still on the boil... * * * Martti OH2BH, was active from the new QTH of Miks 5B4TI, for the European CW Contest. 80Z, is a special prefix for the 20th Anniversary of the World Amateur Radio Union. It is expected to continue until the end of this month. * * * Gerben PA0GAM, was operational from the Sudan last month, using the station at the Youth Palace - 4Z9SS, for his regular bias. * * * I spoke with Brian BRS 86037, whilst he was in Melbourne on business and he hoped to be signed ashore with his station this year. * * * The station signing VK9YQ, supposedly from Christmas Island is very suspect! * * * Arnold WB3DAO, is looking for friends in VK to exchange stamps and QSL. His QTH is PO Box 700, Jessup, MD 20794 USA. * * * Unfortunately the published address of KQ4TR may be incorrect and it is not listed in anyDX database. This is the station of a well-known "Agent Vikram" presently being screened in India, which shows our hobby in a bad light, with the emphasis being on an anti-social and anti-national theme. It is possible that this film may be released in other countries including VK, under another title. * * * Four French operators hoped to activate Clippertown towards the end of last month, whilst en route from San Francisco to Acapulco, on a French Naval vessel. * * * Have you heard Q5AGJ? He is giving his QTH as PO Box 1216, Heidelberg, Nebr, USA. Late unconfirmed news is coming from VK9X. The future of XX9, formerly CR9, with a population exceeding 400 000, is at stake. The 15.5 square kilometre tourist area, likened to Monaco because of its casinos and easy way of life, is dependent on its neighbours, and most particularly Hong Kong, some 50 kilometres away, so much so that its currency, the Pataca is "tied" to the Hong Kong Dollar for tourist trade and massive investment.

QSL AND QTH NOTE
Every effort is made to check the authenticity and correctness of addresses and QSL managers published in Amateur Radio but it is emphasised that the magazine or the writer cannot be held responsible for incorrect addresses, wrong managers or non return of cards.

QTHS YOU MAY NEED
3COA TOGA, PO Box 1825, Libreville, Gabon.
4V2BM PO Box 1419, Port au Prince, Haiti.
4X5J PO Box 4099, Jerusalem, Israel.
5RJBD PO Box 1518, Abidjan 01, Ivory Coast.
5VUJ PO Box 30, Niamtougou, Togo.
5WFT PO Box 30270, Nairobi, Kenya.
5ZDMO PO Box 49, Khancour South.
5WEEX PO Box 3007, Casablanca, Morocco.
5Z7EQ PO Box 5343, Cambridge, USA.
7A44LD PO Box 73, Praia, Republic of Cape Verde.
7DVCE PO Box 236, Bacolod City, Philippines.
7EPDL PO Box 5307, Calape, Bohol, Philippines.
7FXA PO Box 3007, Casablanca, Morocco.
7QOJ PO Box 5343, Cambridge, USA.
8Q9GP PO Box 77, Seaport, People's Republic of China.
9C3G FRV, 14 Bis Ave General Compa, Moroni.
9CNLS PO Box 5307, Casablanca, Morocco.
9CQJ PO Box 5343, Cambridge, USA.
A40SO PO Box 981, Muscat, Sultanate of Oman.
B4XZS PO Box 478, Kowloon, People's Republic of China.
CJ4E PO Box 478, Kowloon, People's Republic of China.
D7VCE PO Box 30, Niamtougou, Togo.
E2P2L PO Box 17845-151, Teheran, Iran.
E2WOL PO Box 478, Kowloon, People's Republic of China.
HH9E PO Box 478, Kowloon, People's Republic of China.
HP8BH PO Box 80, Aquaduce, Panama.
I2QDO PO Box 2722, Dublin.
J8BCD PO Box 975, St Vincent, Windward Islands.
J8BAC PO Box 142, St Vincent, Windward Islands.
J9HVE PO Box 478, Kowloon, People's Republic of China.
K5PAH PO Box 433, Tocoa, GA 32977, USA.
K5SMP PO Box 251, Rhode Island.
K5SVX PO Box 251, Rhode Island.
K9XMA PO Box 539, 9R-100,200, Amsite, Netherland.
K9ZL Ustun, SK 11, Ayranci, Ankara, Turkey.
L1BC8TR PO Box 119, Puntarenas, Costa Rica.
L1DLB PO Box 1539, Vissersdijk 13, NL-3319 GT Strasbourg Villa, France.
V3EE PO Box 73, Edgemont, PA 19028, USA.
WE8FRO PO Box 5127, Suffolk, VA 23435, USA.
W8HAA PO Box 8, Pago Pago, American Samoa.
Y5YME PO Box 2025, Castro Valley, CA 94546, USA.
K6MA PO Box 245, Damascus, Syria.
K6MN PO Box 7 Res du Val, Orléansville, F-91290 Arpajon, France.

QSL TO
Any information, QSL cards or operate are sent to the following addresses only. There was a letter in the October 1986 issue of New South Wales.

MACAU — THE FUTURE?
The future of XQ5CFR, formerly 852, with a population of about 350 000, is at stake. It is felt that it will be a wait and see situation, depending mainly on economics and as to how it affects the neighbouring populace.

THANKS
Errors and corrections are extended to the following:

The DX Bulletin is a monthly publication containing the ARRL NEWSLETTER, BARG, CO-QSO, DXulletin, VE3CQ, DX Watch and the ARRL Papers. JAY O'BRIEN'S OSL MANAGER, KB2HBF REPORTS, LONG ISLAND DX BULLETIN, PAPAKURA RADIO CLUB BULLETIN and the WESTLAKES AMATEUR RADIO CLUB BULLETIN. 

Magazines including, BREAK IN, cqQSO, DX POST, JA CO, QSL TODAY, RADIOACTIV, VRON, WEATHER NEWS and WORLDRADIO.

Members who have contributed include VIK1WB, 2PS, E8X, SPI, YL, L30042 and VK9NE. Since thanks to one and all who have made this month's column possible.
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FM-240 has beaten the dol-
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Sp-122 Swr/p 1.8 - 100 MHz
Sp-475 Swr/p 140 - 525 MHz
Sp-420 Swr/p 140 - 525 MHz
Sp-350 Swr/p 1.8 - 500 MHz
Sp-250 Swr/p 1.8 - 500 MHz
Sp-450 Swr/p 140 - 570 MHz
CT-154H 50W Dummy Loads
CT-202 2.5 GHz Dummy Loads
CT-300 250 MHz Dummy Loads
CT-204A 250 MHz Dummy Loads
TP-50X 50/144/430 MHz P. Meter
CC-501 100-1300 MHz Coax Coupler TBA

TD-600 30A (25A Cont.)
TDA-1000 100A (10A Cont.)
TDA-1500 150A (15A Cont.)
TDA-2000 200A (20A Cont.)
TDA-2500 250A (25A Cont.)
TDA-3000 300A (30A Cont.)
TDA-3500 350A (35A Cont.)
TDA-4000 400A (40A Cont.)

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H-7200 200W, 2m
H-7250 200W, 2m
H-8250 200W, 2m
H-9250 200W, 2m
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H-1130 200W, 2m

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Entrance from Little Lonsdale St
Ph: (03) 47 8351 or 67 8131

AMATEUR RADIO, October 1986 - Page 39
As you have probably noticed, there is a new address under the Masthead. I am now living in the western suburbs of Launceston. Although I am writing this six weeks before moving into the new QTH, preliminary indications are that it should be satisfactory.

Conditions of late have improved, although the QRM on the lower frequencies, particularly noticeable in summer months, is starting to be heard. Fortunately, conditions on the higher frequencies will improve to make up for the tropical bands being too noisy. I also suspect that we have emerged from the bottom of the Sunspot Cycle, as a number of spots visible on the Sun’s surface, are slowly increasing.

BUSY, BUSY, BUSY!

This month of October is a busy one for the amateur. Firstly, the annual VK/ZL Contest, with the Phone Section on the 4th and 5th and the CW Section, one week later. On the 18th and 19th we have the annual JOTA participation. This year, because I will be away on my honeymoon, I will not be participating as VK7RH/P. It will be my first break from JOTA since 1973.

CHANGING THE TIME

At the end of this month, we see the re-introduction of Summer Time in the States on the same day. DST ends officially in the UK on the 19th. Those interested in trying to get those elusive Brazilian DX catches, note that Summer Time was also introduced there as an energy conservation measure last November. They may do it again this month!

COLLECTORS PIECES

I recently received details from William Perleberg L70043, of “Sunshine Gardens”, Fern Tree, Tas. 7101, concerning details of Radio Beijing utilising a French Guiana relay for their programming to North America. The Montsinerie site of Radio France Internationale was reportedly using 11.980, 15.230, and 15.445 MHz at 0300 UTC. Also, RFI was able to utilise Chinese HF transmitters as a consequence of the trial reciprocal broadcasting agreement. If you wish to hear these broadcasts now, you are too late as the new French Government, under M. Jacques Chirac, was unable to reach agreement on continuing these reciprocal privileges.

If you are lucky enough to obtain QSLs for RB, you will remember RFI via China, hang on to them as they will be collectors items. France is reportedly going to construct relay facilities in Sri Lanka. These are going to be in the southern part of the island nation, well away from the troubles of the north, which have plagued the Deutsche Welle site at Trincomalee.

FURTHER TO...

Whilst we are on reciprocal agreements, yet another Asian broadcaster recently signed an agreement to utilise transmitter sites in North America. Radio Japan and Radio Canada International will exchange programs over each others senders. At the present time, I am aware that Radio Japan (NHK) commenced transmitters from the Sackville site in October or November, to relay their North American programming. The Sackville site is also used by the BBC and DW to relay programming to the same target areas.

HOT WATER

Presumably RCI will use the NHK facilities to beam programs to Asia. Until recently, this area has been largely neglected by Canada. They commenced producing a Japanese commercial program, which is aired via Radio Tanpa, the Japanese commercial shortwave broadcaster, on a weekly basis.

Also, a Chinese language program and English/French information has been aired over cable systems in Hong Kong occasionally. Both, I believe were produced in Vancouver, BC. Incidentally, RCI got onto a little hot water with its US audience following plans to axe releases to the US. The decision to this Budget Saving measure has taken RCI by surprise. Apparently, there are more listeners in the US than they thought!

Statistics for the May examinations were received recently. It was very pleasing to see that the Novice pass rate was again up to where It was some time ago.

For the interest of those keeping track of such matters, I present a summary of the theory results and some comments.

<table>
<thead>
<tr>
<th>VK</th>
<th>AOCP SAT</th>
<th>NACCP SAT</th>
<th>% PASS</th>
<th>% PASS</th>
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<tr>
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<td>TOTAL</td>
<td>272</td>
<td>32</td>
<td>198</td>
<td>55.5</td>
</tr>
</tbody>
</table>

The AOCP pass rate is still low, however.

It becomes more interesting when we look at it in terms of the examination papers used. For Victoria and New South Wales, three papers were used, one for each capital city and the other for the country centres, so it is difficult to compare their results on a state basis. However, the AOCP paper used for the country centres was also used for both for all the examinations in both Queensland and South Australia/Northern Territory, resulting in widely differing pass rates at both levels.

This suggests that there is a “Quality of Student” factor, but for the regulations examination, VK5/8 had 58.3 percent pass to 41.4 percent for VK5/7.

Is there a statistician in the house?

The variations between examinations by state are often greater than the variations between states for the RFI paper. Unfortunately, I do not have time or background to go into much depth in these analyses, but if any reader wishes to go further, I would be very interested.

Though I am severely short of time, I do not have a sample examination paper this month.

Watching Their Ps and Qs?

Looking at the August issue of Monitoring Times which is published by Bob Grove, a well-known DXer, I see that the Bills in the US Congress are rapidly speeding towards ratification in the Senate. It aims to prevent casual radio listeners from intercepting mobile phone calls or remote broadcast links. If the Bill becomes law, an SWL could face up to a year in a Federal Prison and a US$10,000 fine, if convicted of violating the Communications Privacy Act.

This Bill is designed to protect the privacy of Mobile Cellular Phone Systems which operate around 800 MHz. Many hobby groups are fighting provisions in the Bill which will restrict their monitoring activities in the legally-receivable spectrum. They suggest that instead, cellular system owners develop and install encrypt or digital encoding to enhance the privacy of phone calls. It was unfortunate that one scanner manufacturer advertised the fact that his models were able to intercept the Cellular Mobile Frequencies. This made the US legislators angry and eager to enact the Bill. The company subsequently withdrew the offending advertisement. At deadline time, it is still unclear if the Bill has become law in the US. I will keep you informed.

I also note that cordless phones are continuing to be a problem. Recently, American police dispatchers began to receive calls from “phantom dialers” who locked up the police switchboards. It soon transpired that, when the batteries on a cordless phone get weak, they are susceptible to pulses from household electronic appliances such as microwave ovens, etc. They then begin dialing random digits, usually 911, which happens to be the emergency phone number over there.

I wonder if similar problems have been encountered here? I have certainly experienced problems from second, third or fifth harmonies from them falling within the 80, 40, and 30 metre amateur bands, often landing on a weak DX signal.

Well, that’s all for October. Until next time, the best of 73 and good listening!

—Robin VK7RH

Most of the papers that have been prepared over the years have now been published. I intend to start producing some more, but have not had a lot of feedback on whether or not the regular publication should be continued. I would appreciate comments on this, and I would be more than pleased to receive questions which could be used in sample papers.

—73 Brenda VK3KT

AMENDED JOTA CALLING FREQUENCIES FOR AUSTRALIA

<table>
<thead>
<tr>
<th>Band</th>
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</tr>
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<td>15</td>
<td>21.190</td>
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<tr>
<td>10</td>
<td>29.690</td>
</tr>
</tbody>
</table>

Remember JOTA is on the 18th and 19th of this month. Please participate!
Many readers would have read the letter from Albert VK7BD, of Cottesloe, Western Australia, in last month's Over to You. Albert suggested that AR “devote space to a section of our excellent magazine to a Question and Answer session.”

Hello Albert, we have done just that! Your letter gives heart to us that we were not alone in the idea.

To Albert’s suggestion of the best way of cutting “foam plastic,” one further suggestion — For safety reasons, I suggest that this is a job to be undertaken only when your wife is out shopping!!

Now, in reply to your questions, Albert...

Albert asked why his power supply zener did not show the zener current within its rating? (viz dissipation too high?). You regulated supply, measure the zener current. Is it provide the answer.

In the meantime, study the circuit and check the component ratings. If it is a simple shunt, zener component was then replaced to provide the answer even though it may require several minor changes to effect the remedy.

As a sideline, it was once said of one manufacturer that, after the design engineers completed the prototype unit, the “sales engineers” moved in. They commenced removing each component (individually). Finally, with a box full of “redundant parts” and all the unit failed, that the last component Albert also asked why “it is necessary to have, in an ATU, a variable capacitor in series as well as in parallel?”

I cannot figure out just what configuration you are referring to in this case. Sorry, Albert, but further information is necessary on this one please!

VK2..., e of Epping, New South Wales, writes of problems he has experienced on 14 MHz with incontinent breakers coming in from North American stations, whilst working across Australia.

Normally this column addresses only “technical matters” however, perhaps we can see our way clear to add a paragraph or two on operating bypass the zener, improve your earing and SWR or a shield, cable for the DC power lead. Without a “mud map” further help is a little limited. If the suggestions do not lead you to a cure, as I said earlier, write again. It is well to remember that such problems always have an answer even though it may require several minor changes to effect the remedy.

As a sideline, it was once said of one manufacturer that, after the design engineers completed the prototype unit, the “sales engineers” moved in. They commenced removing each component (individually). Finally, with a box full of “redundant parts” and all the unit failed, that the last component was then replaced to provide the production-line model! Perhaps things have not changed very much with modern trends, regardless of the component prices?

If anyone has a European YL contact during VK2...’s birthday, it would be interesting to know. — Albert

The VK3 girls attended a luncheon to celebrate their birthday. They were given a special trophy to be awarded for the most unique and enjoyable Birthday YL Activity Day for our next birthday.

AUSTRALIAN LADIES AMATEUR RADIO ASSOCIATION

ALARA BIRTHDAY YL ACTIVITY DAY
Our Birthday YL Activity Day on July 26, was very pleasant and we were able to catch up with several DX members, mainly Canadian, American and New Zealand YLS.

Several “semi-nets” formed, and we had the opportunity to chat to some of the girls we had not heard from in a long time, plus meeting others for the first time.

Unfortunately, propagation was not all that good, very little being heard on 10 or 15 metres. The main DX activity was on 20 metres, with VK and some ZL activity on 80 metres later in the day. As a sideline, it was once said of one manufacturer that, after the design engineers completed the prototype unit, the “sales engineers” moved in. They commenced removing each component (individually). Finally, with a box full of “redundant parts” and all the unit failed, that the last component was then replaced to provide the production-line model! Perhaps things have not changed very much with modern trends, regardless of the component prices?

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The VK3 girls attended a luncheon to celebrate their birthday. They were given a special trophy to be awarded for the most unique and enjoyable Birthday YL Activity Day for our next birthday.

ALARA CONTEST
With the ALARA Contest just around the corner, it may by an opportunity time to remind everyone about the special trophy to be awarded for the highest aggregate score over five years of a licensed YL operator (not necessarily Australian).

The year of commencement was 1983.

Mavis VK7WS

Joy Collis VK2EBX

PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW, 2668

JOY COLLIS VK2EBX

NEW MEMBERS
Additions to the membership list (July AHR). VK Associate member — Margaret Hamilton, VK7BD, July 20, 1986.

Angie Gocci, February 25, 1986. Welcome to Margaret and Angie. — Until next month, 7533, Joy VK2EBX

NICAD HAS OWN SOLAR PANEL
The SN 2000 is a NICAD battery with a built-in solar panel. This D-size NICAD provides a full capacity of 1.2 volts at 1.2 amp hours. In full sunlight conditions, it charges at half the normal recommended wall plug charge rate, or where mains power is available it can be charged in the normal manner. Parallel or series solar charging is possible because each cell charges independently, and with the use of protection devices during discharge, offers the option of building solar systems of almost any voltage or amp hour rating using these single cell NICADs.

Impact and weather resistant, with good high/low temperature performance and a service life that exceeds IEC 285, the SN 2000 is suitable for any application requiring reliable power.
RESULTS of the 1985 VK/ZL/O CONTEST

OVERSEAS PARTICIPANTS

These are the DX results for the 1985 VK/ZL/O Contest. As mentioned previously, the conditions for this phone weekend were terrible and slightly better for the CW Contest.

The standard of logs was very high and I thank all those who took the time to enter a log.

The purpose of this contest is for VK/ZL and Oceania stations to contact DX stations around the world and this would not be possible if DX stations did not participate.

Call signs printed in bold type will receive an award and these will be posted shortly.

As this is my last VK/ZL/O Contest as Manager I want to thank all those who have helped me, and in particular, Jock White ZL2GX, the NZART Awards Manager, who will be doing the work for the 1986 Contest. So, remember to send your log to him at 152 Lynton Road, Gisborne, New Zealand.

MODE – PHONE

<table>
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NORTH AMERICA

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Cheap HB Power Supplies (P : N): Frequency Synthesiser (G), All Band Antenna (P : N).


BREAK IN, June 1986 — Diamond Jubilee Conference.

QST, May 1986 — RF Measurement. Return Loss Bridge (G).

HAM RADIO, April 1986 — Grounded Grid Amplifier Parasitics (T : P), Satellite Communication (G : T), AC Line Transient Protection (P)


HEAT-SHRINK SLEEVE MARKING

A new system has been released for applying permanent marks to heat shrinkable sleeving using standard equipment.

The HSI system uses an iridized polyolefin which is flattened and then bonded to A4 size paper for marking by the user.

The paper is fed into a standard typewriter and marks can be typed as needed directly onto the sleeving. Alternatively marks can be scribed onto the sleeving with the use of a permanent marking pen. Once marked HSI is then cut, removed from the paper by hand and heat shrunk (2.5 to 3 mm) on the cable end.

Nine widths of sleeves are available from 1.6 to 25.4 mm diameter. The layout of HSI on the sheet allows random selection of marks for rapid ease of use.

Adapted from Electronics News, p33 — April 1986
INTERNATIONAL NEWS

FROM HOLLAND

The following is a report of a meeting between the Radio Communications Branch of the Dutch PTT and the VERON (official amateur organisation), VRZA (the second unofficial amateur organisation) and NCO (a splinter-group, but recognised by PTT, VERON and VRZA). It was published in Electronic, June 1986 and translated for Amateur Radio by John Aarsse VK4QA.

NCV announced that it is in liquidation and will not be represented anymore at the half-yearly PTT/ amateur meetings.

CEPT Licensing

CEPT is the European organisation of PTTs. The Dutch PTT announces that it will introduce simultaneously with the new Dutch licensing system a CEPT licence applicable to the Netherlands. It will be a publication announcing that amateurs from other CEPT countries with recognised licenses will be allowed to operate in the Netherlands for short periods without applying for a Dutch visitors licence. (Grade A, Grade B "full" licenses and Grade C (equal to VK limited licenses). Dutch amateurs will receive a new registration card containing, in several European languages, a declaration indicating the appropriate licence the bearer has been issued with. This document will be valid in those countries who have adopted the CEPT licensing system.

50 MHz Operations

CEPT has discussed opening 50 MHz to amateurs. The UK is the only CEPT country permitting amateurs to use part of the 50 MHz band (with restrictions). France, Switzerland, and Sweden have stated that they do not wish to allow amateurs to use this band at all and will not allow it for the present. It is therefore expected that a solution will not be found before the year 2000. VERON asked if specific experience could be conducted when the sunspot cycle was going up again. The Chairman said that the answer will not necessarily be "no."

Unmanned Stations

The new proposed licensing requirements will insist that unmanned stations will need a special licence. Up until now repeaters needed separate and special licences. The new proposals will allow such a station to be part of an individual station licence (private or club) and no separate request has to be made. It will be necessary to identify such stations with a special prefix. The suffix can be issued, if possible, as the applicant prefers.

Such licenses will initially be valid for one year. Continuation of experiments is possible but will require a new application. Before an application is considered, consultation will take place between the PTT and the two amateur organisations.

Following are tentative suggested prefixes.

Two metre repeaters ................................ P13
70 cm repeaters .................................. P12
Linear ATV repeaters ............................... P16
Mailbox stations .................................. P18

Subsequent discussion results in PTT agreeing that all applications will be handled by the two organisations, a situation already in existence with regard to present repeaters.

CEPT will not determine the principle, power, etc. of proposed stations. The two organisations decided to co-operate, within IARU 1 recommendations, to determine power antenna heights and antenna gain.

Regarding indentification, it will be allowed that an unmanned station will transmit no more than four times an hour the call sign followed by a possible traffic list (mailbox). It is not clear if this is the correct approach.

—Reprinted from ELECTRON, June 1986 and translated by John Aarsse VK4QA

INTERNATIONAL TRAVEL HOST EXCHANGE

Following is an additional list of amateurs who are participating in the International Travel Host Exchange Program. (See initial list page 43, August issue).

Belgium
Jean Fagnoul ON1KFH

Canada
F H Prouse VE3PEJ, Carlton Sole VE3HGT, Bob Kane VE3KUG, Ross Car VE6FPG, Neil Smith VEBAZA, and William Giesbret VE7FRR.

Germany
Johannes Amchewicz DK6JB.

Greece
Agis Sarakinos SV1ACS.

India
M S C Radharaman VU2RAD and G D Gopal VU2GDD.

United States of America
Dave McCurdy N1DLS, Mr and Mrs Garry Bartels KJ4KM and KB4TGC, Robert Blumberg AA4U, Mr and Mrs Richard Genaille W4UW, G E McGrede NJ5DM, Mr and Mrs Ken Hopkins W9WCP r nd KABFE, Mr and Mrs Karl Pruett W4ONPK, and Harvey Stadick KAG6BJ.

HIGHEST MEMBERSHIP IN JAPAN

Due to a membership promotion campaign in November and December, last year, the Japanese Amateur Radio League has, as of February 7, 1986, a total of 136,369 members, which is the highest in the history of the League.

—From Region 3 News, April 1986

BOTSWANA'S 20th INDEPENDENCE ANNIVERSARY

To celebrate Botswana's 20th Anniversary of Independence, the Botswana Radio Amateurs have been permitted to use the following Special Event Call Signs, during September and October 1986.

Full Licensees will use the prefix 602.
Novice Licensees will use the prefix 800.

BARS members, including SWLs and other Botswana active radio amateurs are being issued with QSL cards.

—Contributed by Gerold Tjarks A2ZLiBU2FJ
Secretary BARS

FASTEST MOS CHIP!

A new silicon MOS chip, believed to be the fastest practical chip to date has been tested at speeds of up to three gigabits per second — fast enough to use in high speed fibre optic transmission systems.

This silicon chip shows that silicon can be used for gigabit-per-second logic circuits, and silicon offers higher yield, lower cost, and higher levels of integration than germanium circuits.

Most importantly, the circuit consumes little power.

The multiplexer chip has 200 logic gates and dissipates only half a watt of power whilst the de-multiplexer chip has 400 logic gates and dissipates 0.75 watts. Both chips are 2 mm².

The chips were designed in 0.75-micron NMOS technology and feature channel lengths as small as 0.5 microns.

The multiplexer accepts 12 parallel input channels and, using time-division multiplexing, generates a multi-gigabit-per-second serial output. The de-multiplexer performs the reverse operation.

The propagation delay in each gate on the chips is only 150 pico-seconds.

—From Electronic News, p4 — April 1986

TEGA ELECTRONICS

YOUR LOCAL AMATEUR RADIO REPAIR FACILITY.

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We特殊ise in HF, VHF, UHF, and MICROWAVE REPAIR AND DEVELOPMENT.

75 GRAND BOULEVARD MONTMORENCY, VIC 3094.
Ph (03) 431 1153 Terry and Gary (VK3ZHP)

• Comprehensive range of HF, VHF, and UHF Communications Antennas and Accessories, suit amateurs, CBers, and SWLers.
• Butt section Aluminium Towers.
• Range of Low Loss Coaxial Cable and Connectors. Also Debedglass Guys.

Write for our latest Catalogue.

ANTENNAS
56 CAMPBELL STREET, BIRCHPR, VIC 3483.
PHONE: (054) 92 2224.

AMATEUR RADIO, October 1986 - Page 43
CONTEST CALENDAR

OCTOBER
4-5 VK/ZL Oceania Phone Contest (Rules August issue)
4-5 IRSA World Championship
11-12 VK/ZL Oceania CW Contest (Rules August issue)
12 RSGB 21/28 MHz SSB Contest
15-17 YLRL Anniversary CW Party
19-21 VK7NCP RTTY Contest
19-21 1986 Fall CW Contest (Rules August issue)
19-20 CARTG RTTY Contest
25-26 CO WW DX Phone Contest
29-31 YLRL Anniversary SSB Party

NOVEMBER
-8 Australian Ladies Amateur Radio Association Contest (Rules September issue)
-8-9 European RTTY Contest (Rules August issue)
-15 AHAS National CW Sprint (Rules this issue)
-15-16 Oceania QRP CW Contest
-22 AHAS National Phone Sprint (Rules this issue)
29-30 CQ WW DX CW Contest

DECEMBER
-13 Ross Hunt Memorial VHF Contest begins

JANUARY
-5 Ross Hunt Memorial VHF Contest concludes

VK NOVICE CONTEST 1986

Well, I wonder if there is any truth in the rumour that a niche is being built in the wall of a shack in the south-east of South Australia into which the Novice Contest Trophy can be cemented. It has been variously hinted that Don VK5NOD, intends to try something along those lines as he has emerged as the top scorer in the VK Novice Contest for the third consecutive year.

I guess that by his actions, Don is really throwing out a strong effort to all to try and wrest the trophy from him. Our heartiest congratulations go to Don for his fine effort. To win the contest this year, Don increased his composite Phone/CW score by 304 points. This may have been helped by the fact that there were 87 entries in this contest an increase of 28 over last year's effort.

There could be various reasons for the increased interest, however I feel that one major factor is the change of time of the contest to the month of June. Most contest point to the fact that this is an enjoyable event.

Again there has been a fair amount of criticism at the lack of Novice stations operating using the CW mode. The number of logs submitted for this section increased from four last year to 11 this year, which certainly a marked improvement. I would like to see this rate of improvement maintained as I know that if more operators try the CW mode in a contest they will find it rather enjoyable and not really difficult. Contest operation is nothing like rag-chewing, particularly where CW is concerned. So, I suggest that you try it for yourself at some point. This is rather the CW section.

There seemed to be more novices again this year, as indicated by the 388 logs submitted this year as compared to 266 last year. Most of the additional logs were in the CW sections of other contests in the future.

In general, logs were of a good standard, however, some operators left it to me to score their logs for them. It was also not apparent to some that a separate log was necessary where both phone and CW entries were made.

On the subject of logs, I would like to draw attention to the efforts of Len VK3NLS. I know that Len will not mind me telling this story now, well after the event. Several years ago, I entered into some correspondence with Len due to the fact that his log for a particular contest was definitely not acceptable. Well, I can certainly tell you that in the contest, as with others, a separate log which was not faulted in any way. As well, he has provided additional help by including complete sorting of the log in order of call signs, etc. Yes, Len's log was computer generated but, as said before, it was immaculate. I suggest that if you want to find out how to make an excellent log, VK3NLS is the person to approach for advice.

Individual scores for the 1986 VK Novice Contest are as follows:

PHONE/NOVICE
VK5NOD 971 VK2NNK 499
VK2BQS 815 VK5KX 331
VK7NCP 778 VK2JAM 299
VK2NAN 768 VK2PYM 227
VK4DS 730 VK6NTJ 222
VK5VX 596 VK2SOD 204
VK2NKA 594 VK6NSH 194
VK3KRL 557 VK3BNB 133
VK94 504 VK7NB 107
VK5NTT 502 VK3JOV 83

CW/NOVICE
VK4AT 135 VK5NB 137
VK2PYM 127 VK3VAS 119
VK6AX 110 VK1VTH 106
VK3NLS 76 VK3KRL 74
VK5NOD 72 VK6NTJ 4

PHONE/CALL
VK3JW 1498 VK3CLS 209
VK5S5J 1343 VK6G0S 170
VK2C3X 700 VK3DOP 168
VK5QX 620 VK3ZJ 146
VK5ATU 591 VK6AFW 122
VK3DOM 582 VK3DGP 113
VK3YH 514 VK5C3 109
VK2AKP 504 VK5AGX 69
VK4OD 419 VK3DBO 64
VK3BJN 395 VK8ED 64
VK1FG 311 VK1CAT 62
VK1L 297 VK3K 20
VK2RJ 247 VK3XB 15
VK25A 213 VK5GO 39

CW/CALL
VK3GCG 249 VK6AFW 64
VK3NK 155 VK4TT 49
VK2PS 139 VK3XB 48
VK40D 113 VK5QX 34
VK2DQ 94 VK3XF 27
VK4AO 90 VK3KS 22
VK3CMZ 86 VK3XZ 19
VK2AZR 78 VK5ATU 2
VK2RJ 72 VK5GZ 8

PHONE/CLUB
VK3JW 949 VK3SCD 314
VK2YIP 747 VK3PPA 284

CLCW/CLUB
VK3JW 140

CHECK LOGS
VK5G 1
VK4BA 1

Incidentally, an interesting aspect regarding this contest has surfaced. A telephone call from Don VK5NOD, provided the information that the VK Novice Contest Trophy, which is in the form of a plaque, has the call signs of each entrant engraved on it against the year in which the trophy was won by that operator. Don pointed out that in each case the "year" shown on the trophy is incorrect. I have found one trophy for K and J calls — I advised to treat as novice calls which I noted

Contests
Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA. 5001
National CW and Phone Sprints

This month we announce a new and innovative approach to the subject of on-air competition. This approach is designed to encourage more activity at various times, rather than the traditional big events or "scrambles", one for phone and one for CW to be held in November.

As Federal Contest Manager I have expressed some concern over the past few years that there are too many contests run on our bands.

Further, there has been a large body of opinion to the effect that contests should be fairly tightly restricted in terms of the number that are run. The approach adopted by the Adelade Hills Amateur Radio Society Incorporated, has quite a deal to commend it.

People do not always operate at the same time pointing out to you quite clearly that these competitions are not organised by me as Federal Contest Manager. I am simply providing some possible alternatives.

The Sprints are a suggested annual event, however if sufficient interest is shown, consideration could be given to running these short on-air events at various times of the year.

It would let me know what you think of this idea which is certainly a new approach to competition on a national basis in amateur radio in Australia.

We have often entered Scramble Contests at various conventions and have always found them to be very good fun. It seems to me that the rules adopted ensure that there is a frequency restriction applied, (one band only), as well as a time restriction. (One-and-a-half-hours duration).

As such, there is a very good possibility that the idea will appeal to many of you who would not otherwise enter into contests at any time. Full details are provided below.

Remembrance Day Contest

This material is being compiled just one week before the Remembrance Day Contest. I am looking forward to entering same and hope that I will be able to exchange serial numbers with many of you. It will be rather interesting to see just how long it is going to take for the Weighting Factors to change due to Divisional Activity to a degree of the country. And much learned. Spoiled a bit by furR

It seems to me that the rules adopted are about the same things, however, it is also necessary to explain a little with regard to the production of these notes and the limitations brought about by the nature of our magazine. The rules adopted by the State and regions will be the law by which they are to carry on the business, or disqualification will be final. Certificates will be awarded to the highest scorer at all in this contest. Sometimes, I am inclined to think that I am perhaps just being ignored. It is a lonely feeling at times although I can console myself with the thought that there is likely to be open. Yet again, we may see some changes from the usual pattern of the same stations coming up with the top scores year after year. Or will we?

General Contest Information

From time-to-time I am asked by individual operators what is the best way to go about entering into contests. I also receive suggestions along the lines of running a separate section in the notes for beginners. There is certainly merit in such things, however, it is not necessary to explain a little with regard to the production of these notes and the limitations brought about by the nature of our magazine.

Most of the stations that I know of do not have the time available to me to sit down and write up separate material for this column. I have to try to keep up to date in the matter of contests and information that is available. In this instance, the approach adopted by the Adelade Hills Amateur Radio Society Incorporated, has quite a deal to commend it.

People do not always operate at the same time pointing out to you quite clearly that these competitions are not organised by me as Federal Contest Manager. I am simply providing some possible alternatives.

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As such, there is a very good possibility that the idea will appeal to many of you who would not otherwise enter into contests at any time. Full details are provided below.

Commonwealth Contest 1986

According to some of the puntids, Cycle 21 has finished and we are again on the way up. The number of VK entrants in this contest seems to be very much tied in with conditions, the members in the last three years 84-66; 85-58 and bottoming...
this year at 52, (but still a very respectable total), the turn-up must have taken place sometime after Labor Day. However, few VKs would have labelled the conditions during the contest as even "fair."

However, the outright winner scored on 140 call areas and points were run up by VKs. Russ Coleston VK4XA improved his position from eighth to fifth, and scored 630 points more than in 1985. As will be seen from the table, only one VK had a back-up to VK7. 6Y5HN, making the highest number of QSOs, 471; VE3BV 416; VE6OUJ 400; and while Russ made 276. In the race for bonuses, VE7CC was top at 195, VK6LW second — 75 points ahead of VK4RAN. 

While not so many ZLs seemed to be operating as in 1985, there were at least a few — it was disappointing that only three of them appear in the top 50. In the Receiving Section, Eric Trebilcock made it four in a row winning by 105 points over his old adversary, BR5 1066.

### TOP TEN

1. VE3BV 1857 1062 VE4OH 1047 3945
2. 6Y5HN 1836 978 G3GMM/A 956
3. VE7CC 1757 927 G3QZ 936
4. VE2SJJ 1713 921 G4BUO 927
5. VK5RZ 1680 917 G4BUO 927
6. VK6AS 1675 899 G4BUO 927
7. VK5QGZ 1627 902 G4BUO 927
8. VK4APZ 1617 902 G4BUO 927
9. VK3SV 1529 927 G4BUO 927
10. VK5SN 1529 927 G4BUO 927

### AUSTRALIAN SCORES

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<tr>
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### CALL AREAS WORKED FROM OVERSEAS

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<tr>
<td>VK6RU</td>
<td>1464</td>
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</tr>
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</table>

### AUSTRALIAN RADIO

- **VK4XA:** VK4XA won awards in both categories. His station — apparently Ivor on the air while Mavis was in the kitchen — apparently Ivor on the air while Mavis was in the kitchen.
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### ARWS

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FIRST IRSA WORLD RADIO CHAMPIONSHIP
Phone: Saturday, October 4, 1986, 0000 to 2400 UTC.
CW: Sunday, October 5, 1986, 0000 to 2400 UTC.
Single operator stations may operate no more than 22 hours out of the 24 hours on each mode. A minimum of two hours rest time may be taken in one or two rest periods. All multi-operator stations can operate for the full 24 hours.

Objectives: For amateurs around the world to contact other amateurs in as many countries as possible. All contacts fixed or mobile licensed are to be logged. The all-country multiplier for DX stations is to be contacted on as many bands as possible around the world, including own country, count.

Bands: 1.8, 3.5, 7, 14, 21, 28 MHz.
Number Exchange: Signal report plus the consecutive QSO number starting with 001. (59001 phone and 599001 CW).
Points: Each correctly sent exchange is worth one point, each correctly received exchange is worth one point on phone and two points on CW; a total of two (three on CW) points for each error free contact. The same station can be contacted only once on each band and mode for a valid point credit. Contacts with own country count also.

Multipliers: On each band a multiplier of one for each different DXCC country contacted, plus one for each call area in the following countries: Australia VK1-K; Brazil PY1-K; Canada VE1-K; VO1. VO3.VO4.VO5.VO6.VO7.VO8.VO9.Europe: FR, ES, UK, DE, IT, ITA, IRE, IS, DK, NO, PT, FI. USSR: UA1, 3, 4, 6. Asian RFSSR: USSR UA9, 0; USA/WK1n etc 0-9. (Do not count VK1 as a VK country too). Also, a multiplier of one for each of the following miscellaneous and aeronautical mobile group J/M, /M/M. Stations, except mobiles, operating from another call area must sign their call with a slash and a number and a letter; eg K4VX/0, WA8HS/0.

Scoring: The final score is the result of the total QSO points from all bands multiplied by the total multipliers from all bands.

Categories:
H. High Power — stations using the maximum output up to 100 watts output. (2000 watts PEP).
L. Low Power — stations using the maximum output power of 100 watts (2000 watts PEP).
M. Multi Transmitter and/or Multi Transmitter. Multi Operator — Multi Transmitter. E. Club Competition — Combined.

In the above group of power categories there are the following categories:

A. Single Operator — All Band.
B. Single Operator — Single Band: 160, 80, 40, 20, 15, 10 metres.
C. Multi Operator — Single Transmitter.
D. Multi Operator — Multi Transmitter.
E. Club Competition — Combined.

Combined Phone and CW scores will be used for the complete competition category. Phone and CW results will also be listed and awards issued.

Category A and B can be operated by a single operator, without any other assistance from other operators, repeater nets or bulletin boards.

Single transmitter category stations may use only one transmitter which is connected to the power source during the contest. In case of failure, it may be replaced by another transmitter. Spotting operators may use receivers or transceivers with transmitter disabled only.

The multi transmitter category stations may operate one transmitter per band simultaneously. All transmitters must be located within a 500 metre radius of the station licensees address. The antennas must be physically connected by wires to the transmitter.

Category E — Club competition entries may claim a maximum of one station per category, in a selected power group, or each mode (maximum 15 — nine phone and six on CW). The final club score is the addition of individual highest scores made by the club members on both modes. Examiners and mobile operations by the club members are not allowed. The club official must submit a list of stations, their category and scores. Each power group will be judged separately.

Awards: There will be awards of certificates, trophies and plaques.

Log Instructions: All dates/times must be in UTC. All the sent and received exchanges must be logged. A multiplier should be indicated only the first time it is worked on each band. Logs must be checked for duplicate contact and QSO points and multipliers. Do not use separate sheets for each band, except for multi operator, multi transmitter stations which should keep separate logs and numbering per band. Single operator stations must clearly mark the rest periods in the log and should indicate the total operating time on the summary sheet. A sample contest form kit is available from IRSA for US$1 or 3 IRCs.

All participants are encouraged to send the log in regard to their score. They are needed for checking and awarding.

A one year subscription to Radiosporting magazine will be awarded to the 10 stations selected by a draw from the logs received.

Deadline: Logs must be mailed not later than 30 days of the contest and be in the hands of the IRSA WRC Contest Committee by December 31, 1986. Logs to: IRSA WRC Contest Chairman, W3FG, PO Box 7, Odenton, MD, 21113-0007, USA.

WILLIS AIR-WOUND INDUCTANCES
Tinned Copper Wire on Polystyrene Supports

<table>
<thead>
<tr>
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<th>DIAM LENGTH</th>
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<td>3</td>
<td>100</td>
<td>16</td>
<td>$1.95</td>
</tr>
</tbody>
</table>

WILLIS Air-Wound Inductances are a high quality product manufactured to the requirements of professionals in the electronic field.

The coils listed above are classed as "Bulk Inductance" and are intended to be used for individual requirements. Complete coils can be used of course, if the total inductance is the required level.

The Inductance values shown are approximate allowing for any variations in wire gauge and other small manufacturing variables.

Take the hard work out of Coil Winding — use "WILLIS" AIR-WOUND INDUCTANCES

WILLIAM WILLIS & Co. Pty. Ltd.
98 Canterbury Road, Canterbury, Vic. 3126.
PHONE: (03) 836 0707

OHI SO ENVIOS

ULRICH DJOKR, the DARCA National Bandwatch (Intruder Watch) Co-ordinator, reports that the net of the "Ministry of Foreign Affairs," in Islamabad, has, as a result of complaints, QSed from around 14.3 95 MHz. They should no longer be a problem to amateurs active on the top end of 20 metres. I have no evidence of interference in VK from the net, but it is nice to know that intruder watchers around the world are keeping an eye on things.

INTERFERENCE BECOMING RIFE

Moving a little south-east, a letter from Bernd DL7MV, of Bandung, Indonesia, tells me he is interested in trying to help the Intruder Watch with the problem of the alleged Indonesian interference which is becoming rife on 28 MHz. I hope to be able to tell you more on this later.

HELPERS FOR THE MONTH

More good help in June 1986, from VK5s DWV, PS, OL, Mr G H A Bradford, VK3s AMD, CGG, VK4s AKX, BG, BHJ, BN, BTW, DA, KHZ, VK5s BIF GZ, VK6s JD, RO, XV, VK7RH, VK8s HA and MA.

There were 278 cases of broadcasting interference reported, 141 in the CW mode, 69 RTTY pests, 38 other modes and 38 stations reported. The VI prefix is allowed for use in South Australia until December 31, so don't suspect piracy if you hear someone using this prefix.

OH SO ENVIOS

Often, as I write this column, I think of and envy those who write DX news columns. While they, on one hand, can pass on the good news of who are on the bands for the chasing, I have, unfortunately, often news to pass on of those who shouldn't be on the bands. One of these days I will indulge in a fantasy, and report that "no intruders were heard for the previous month!!"

USSR SHIPPING

Some interesting information to hand, courtesy of Colin VK2PVL, who states in his Popular Column for this month, 10h 1984. The article was written by Harry Caul KIL9XL, and deals with signals to and from USSR shipping.

Harry says, "Vessels belonging to the Soviet Merchant Marine, have radio call signs which are generally four-letter-type names, commencing at the letter U or some other prefix assigned to the USSR. Typical examples would include:

"ESXC (cargo vessel Magnit); UOIR (freighter Labinski); and ERUQ (freighter Gougeau). These call signs are shown in the list of merchant marine communications registries for commercial purposes. The radio call signs of fleet vessels of the Soviet Navy, of course, would not appear in the other lists." And..."for CW operations, vessels communicating with the U prefixed shore stations will most likely be using frequencies within the same band as the shore station, first establishing contact on a calling frequency and then switching to a mutually agreed-upon working channel." An extensive list of call signs accompanies the article and the infamous "UMS" appears, being listed as operating from Moscow.

So we learn a little more each day. As I close the column, I must point out that by far the greatest number of intrusions into our bands are by stations whose call signs begin with the letter "U". Hmmm. See you next month, and take care.
AWARDS ISSUED RECENTLY

DXCC PHONE
347 Bill Garvey VK2CWG

WAVKCA
1489 Club Station, Novorossiieck UK6AAJ
1490 Victor H Apakhtin UW1CX
1491 Valery Matoushin UA8NN
1492 Paul Chipenko UA0LQCM
1493 W W Kostijuk UB5MDL
1494 Michael Kamendrovsky UA1AVO
1495 George Aferdew UB5WX
1496 Alex Zelenin UA3QJK
1497 Alex Ertsskin UA0ABK
1498 Vladimir A Korolev UA0DOO
1499 O E Novichkov UAGYDX

HAVKCA
116 Igor Tolmachev UA1 169 898
117 Alex Tkachenko UA3 147 122
118 Alexandr Mastow UJ8 040 207
119 S E Stepanov UA3 130 272

WIA 75 AWARD

Following is an update to recipients of the WIA 75 Award.

No — 666 Eduard Anwar YC3CPJ
Cert No — 667 George R McKercher W0MLY
Cert No — 668 Donny Sirait YC6LID
Cert No — 669 Andrew Woolf VK2EPO
Cert No — 670 Soemardiono Isnaeni (Isna) YC3JJV
Cert No — 671 Herman Chosim YC3BR
Cert No — 672 Bambang Sutiyono YC2BLR

MARIAN CENTENARY AWARD

Further to the Marion Centenary Award which was announced in last month's column, the extremely attractive Award Certificates have been printed. Each Award will be despatched in a sturdy mailing tube to ensure safe delivery. See page 44, September AR for all details for claiming the Award.

INTERNATIONAL RADIOSPORT ASSOCIATION

The International Radiosport Association is an independent international organisation dedicated to the promotion of quality and sportsmanship in amateur radio. Its purposes and objectives are:

- To promote international friendship and goodwill through sportsmanship, radio contesting and DXing.
- To improve the quality of amateur radio operators and operating through education and experience, by voicing the opinions of radio amateurs that are experienced and have contributed to the hobby.
- To promote amateur radio contesting and other operating-related activities as a sport, and to provide the publicity and recognition that it deserves in the public media.
- To publish timely articles in the monthly magazine Radiosporting, to feature technical articles on equipment design and modification, antenna construction, radio-wave propagation, and commercial equipment reviews by qualified people.
- To organise, as an annual event, the International Contest Symposium, which runs parallel (evening) with the Dayton Hamvention; to feature timely topics with the participation of some of the world's leading amateurs at the symposium.
- To hold an annual Awards Dinner with an entertainment program, where awards for various achievements are presented.
- To maintain and publish all time records tables for significant contests.
- To sponsor and run an annual World Radio Championship Contest and World Contest Championship, based on results of a number of major contests, with the annual Contest of the Year awards in various categories.
- To administer the Contest Hall of Fame and vote on awarding membership to those who have significantly contributed to the sport of contesting, and to assist in the scheduling of international contests.
- To hold regular weekly meetings on air, 14.200 MHz.
- To provide an automatic, computer controlled bulletin station that transmits the latest DX and Contest news on CW and RTTY, 14.098 MHz.
- All in all, the IRSA is dedicated to the pursuit of excellence and quality in amateur radio by promoting, publicising and leading the way.

Attractive numbered membership certificates and badges are issued to members. IRSA is run by contesters who are selected for their accomplishments and it is independent of any national or commercial organisation.

IRSA will assist and sponsor Contest/DXpeditions, Trophies and other radio sporting and publicity events.

IRSA is a non-profit organisation, with all proceeds to be used to finance events and awards sponsored by IRSA and to cover expenses incurred by the Association.

IRSA members can display the IRSA logo on their QSL cards and correspondence; members agree to obey the Contested Code of Ethics and to promote it.

The initial fee to join the IRSA is US$9; it includes the cost of a certificate and a badge. The yearly membership dues are US$4. (Or 22 and 10 IRSA respectively).

Honorary Life Membership will be awarded to those who significantly contribute to IRSA and the sport of contesting.

Members are entitled to be elected and to elect officers of IRSA. They will also enjoy many services and privileges offered exclusively to members.

IRSA Board of Directors

Yuri VE3BNM, George VE3JNK, Terry N6CW, Frank VE3EUR, VE3ELZ, Dave Goodfellow, Yuri VE3ZJ, Jiri OK2RZ, Jiri VE3JA, Martin VE3MR and Mike VE3JTO.

DX Cert No — 901

GENERAL RULES

The DXCA program is sponsored by the IRSA and Radiosporting magazine for all licensed radio amateurs and shortwave listeners all over the world.

All contacts must be made from the same country. Maritime, aeronautical and land mobile stations may operate from anywhere in the world.

Only contacts made after January 1, 1986 are valid for the basic award.

Awards for club stations will be issued to the club and not to an individual operator.

All amateur bands for which an applicant holds a valid license may be used, including new WARC bands.

QSL cards for the awards must be in the possession of the applicant. The application for the award must be certified by two licensed amateurs with a statement that the list of contacts and QSL cards agree. Any altering or forging will result in disqualification. The IRSA Awards Committee has the right to request the QSL cards for verification.

The ARRL DXCC countries list criteria will be used in determining what constitutes a "country." A particular operation or DXpedition does not have to be recognised by the ARRL in order to count for DXCA; ie Burma. As long as there is a reasonable proof that the operation took place as claimed, it will be recognised. If it is found in the future that certain operations were not legitimate, the credit for that operation will be removed from all applications claiming the operation in question.

All officially allowed modes of communication may be used: CW, SSB, AM, FM, Packet, RTTY, SSTV and Mixed-mode. Also separate categories will be recognised for satellite contacts, QRP, QRPs and mobile stations. All contacts must be two-way, using the same mode, except for the mixed mode. A valid contact must consist of a call sign and signal report exchange.

All claimed contacts must be made by the operators themselves, without the help of a third party, primary or net operation. Non-interference with commercial services on shared bands, fair play and good sportsmanship are required of all DXCA holders and applicants. In the event of special code or continued poor operating ethics, an individual may be disqualified from the DXCA by action of the DXCA Awards Committee.

The application must contain a station's call sign, name and address, type of award applied for, and list of contacts. The list of contacts and any...
QSL cards in possession must include: call sign, signal report received, band, date, time in UTC, and two-way mode.

Call signs of all certificate holders will be published in Radiosporting magazine and a DXCA Honour Roll will be published twice a year.

The first 20 winners of monoband and multiband awards will receive a free one year subscription to Radiosporting magazine.

The decision of the IRSA Awards Committee will be final.

All applications to be sent to IRSA — DXCA, Box 282, Pine Brook, NJ, 07058, USA.

SINGLE BAND DXCA

Single band DXCA Century Award is issued for working or hearing a minimum of 100 countries on one band. Endorsement stickers are issued in increments of 20 countries up to 240, increments of 10 up to 300 and increments of 5 above 300 countries.

Contacts made on all amateur bands (1.8, 3.5, 7, 10, 14, 18, 21, 24, 28 MHz and all VHF/UHF bands), as permitted by the license in the country of the applicant, are eligible for the award. All contacts must be on one band. No cross-band contacts are allowed.

The basic award will be issued for a minimum of 100 countries confirmed on one band. A numbered endorsement sticker will be issued for each mode (CW, AM, SSB, FM, RTTY, Packet, SSTV and Mixed) and category (satellite, QRP, QRPP and mobile stations).

The holders of Single Band DXCA are allowed to use the abbreviation signifying the type of award and country total on their QSL cards.

Examples: 1.8 DXCA or 1.8 CW DXCA 124/265 which means Monoband: 1.8 MHz all CW mode, DXCA, 124 countries confirmed since January 1, 1986/number of countries worked.

MULTI-BAND DXCA

6B DXCA, 7B DXCA, etc awards will be issued for confirmations from a minimum of 100 countries on each of at least six bands. A separate award will be issued for working 100 countries on 7, 8, or more bands.

Also, a cumulative total will be kept for an overall countries count similar to the monoband award: ie 7B DXCA (856/1265), which signifies that station has confirmed a minimum of 100 countries on each of seven bands and the total count is 856 countries since January 1, 1986 and 1265 countries on seven bands worked. A numbered sticker will be issued for each mode and category.

Stations having monoband DXCA need not submit the list of contacts already credited for monoband awards. It is sufficient to mention the certificate type and number, and only an additional list of contacts has to be submitted.

Stickers for increments of 100 countries will be issued from 600 to 2000, increments of 50, from 2000 to 2650 and above 2650 countries.

The Honour Roll — listing of top contenders and latest changes in standings will be published in Radiosporting magazine twice a year.

The fee for each award is US$5 or 10 IRCs and each endorsement sticker is US$2 or 4 IRCs. Engraved Honour Roll Plaques will cost US$25.

A set of application forms and countries list for DXCA awards are available from IRSA for an SAE and 3 IRCs.

THE PADDLE STEAMER INDUSTRY JUBILEE 150 AWARD

Further to the announcement of this award in last months Awards Column, an illustration of the award is presented this month.

The award is signed by the Mayor of Renmark, Mr Lionel Sims. It is a three coloured award depicting the paddle steamer Industry grouped with grapes and citrus fruit, local produce of the Riverland. There is also a short history of the PS Industry.

—Contributed by Doug Tamblyn VK5PDT, Awards Manager

NIGERIAN AMATEUR RADIO SOCIETY 25TH ANNIVERSARY CELEBRATION SPECIAL AWARD 1981-1986

During 1986, the Nigerian Amateur Radio Society celebrates its Silver Jubilee. To commemorate the occasion and to encourage more contacts with SN-land, also to show the amateur radio community and friends around the world what NARS has achieved in the last 25 years, the Society will issue the above special award to any licensed amateur/SWL who works/hears amateur radio stations in the Federal Republic of Nigeria during 1986 under the following conditions:

— For stations located outside Nigeria five points are necessary.

These points are established as follows:

— Contact with each SN station — one point

— Contact with a NARS club station — two points

— All modes, all allocated amateur bands

Send a list of contacts or log extract showing details of contacts/SWL reports, witnessed by two licensed amateurs. Contacts between January 1 and December 31, 1986 are valid for this award.

Cost is US$5 for an air mail return.

Address applications to: the Awards Manager, PO Box 2873, Lagos, Nigeria or PO Box 27522, Concord, Calif 94520, USA.

FLYING THE FLAG

The flying of the Australian flag at radio displays has not gone unnoticed.

Sam VK2BVS, was recently presented with a Certificate of Appreciation by Sir Colin Hines, President of the Australian National Flag Association, at a special ceremony at ANZAC House, Sydney.

Amateur radio made 100 new friends that evening as Sir Colin's words were broadcast over the 147 MHz repeater, to the delight of the VIPs that attended the presentation.

AMATEUR PROJECTIONISTS

Information is required from Commercial Theatre Projectionists who are also amateurs with a view to a comprehensive article for Amateur Radio.

Considerable interest has already been shown from replies to a Hamad placed in August's AR, but more is required.

All interested amateurs should contact VK3AH, QTHR.
Electro-Magnetic Compatibility difficulties are as old as radio communication. When G Marconi (Radio Amateur No 1) first operated more than 100 years ago, radio communication was a novelty. We are still dealing with the same problems.

Transmitter frequencies or channels and power levels are laid down in "recommendations" at world radio conferences of the International Telecommunications Union (ITU). These are at least partly adopted by national governments. Amateur radio frequency bands are subject to the same ITU resolutions, which are largely adopted by national government authorities like the Department of Communications (DOC) in Australia, the FCC in the USA, the FTZ in West Germany, etc. These resolutions cover the basic responsibilities and rights of all telecommunication transmitting services.

We now have a continuously growing number of electronic/electrical services, appliances and apparatus which are not supposed to radiate electro-magnetic energy and which are not meant to transmit on frequencies allotted to telecommunication services (like amateur radio, television, broadcast and government business). Little more can be done on the transmitter side of any telecommunication service. Transmitters will always need effective power level and testing method for these transmissions.

Electronic Apparatus or Devices which are not supposed to receive legal radiation from communication transmitters, which have not been designed to be radio receivers, but whose intended function may be adversely affected by acting as receivers due to bad design. (An example is a car cruise control affected by the transmissions from the car radio telephone).

Television, Broadcast, Video Recorders, Frequent Accessories which should have enough selectivity/immunity to receive only legal transmissions from television or broadcast transmitters for which they are intended. They should be able to receive legal transmissions from other frequency channels for which they are not designed, so that legal transmissions cannot be blamed for affecting their operation. Affected only the receiver design (lack of selectivity), or in some cases non-linear devices nearby, may be held responsible.

Only the establishment, adoption and policing of a system of legal standards for receiving and amplifying equipment of all kinds can result in logical, technically correct, fair and just compatibility of transmitter and receiver services.

There is a widespread popular view still held by some members of the legal profession, that the unwanted signal reception effect can simply be stopped by closing down the transmitter. "They try to stop the rain, instead of fixing the leaking roof!" Stating that according to Common Law the legal transmission causes a "Public Nuisance," is an outdated logic, technically wrong (as admitted by some manufacturers), unfair and unjust.

The latter could be used unfairly against radio amateurs, acting as receivers due to bad design. (An example is a car cruise control affected by the transmissions from the car radio telephone). Stating that according to Common Law the legal transmission causes a "Public Nuisance," is an outdated logic, technically wrong (as admitted by some manufacturers), unfair and unjust.

The proportion of the population who are radio amateurs, and is a definite indication of the stage of technological development a nation has attained. Peace-time emergency services and especially the war-time contribution rendered by the self-taught and private financed Amateur Radio Service shows the importance of this activity. The practical experience of radio amateurs, supplementing formal engineering training, is often of benefit to the electronic industry.
SUCCESSFUL LAUNCH OF OSCAR-12/
JAS-1

The Japanese Amateur Satellite, JAS-1, was successfully launched on August 12, 1986 at 2045 hours. In recent months, this column has carried the general specifications of the spacecraft. This month, we have the technical descriptions and appropriate formulae for the telemetry systems and the operational details for the Packet Radio experiment being carried on JAS-1.

WARNING!!

It is my understanding that JAS-1 has an overload detection system incorporated in the spacecraft's hardware and that when the spacecraft is totally operational, the overload circuitry will automatically switch to an alternate mode, eg from Analogue Transponder Operation to Digital Transponder Operation. If excess HIGH INPUT signals are detected in the passband, it is requested that the downlink be limited to ensure that the downlink is no stronger than the beacon output. It is understood that OSCAR-10 was affected by radiation exposure and had to be switched off—may have been the irresponsible person who caused it! Just in case you think only the Americans and Europeans are the alligators within the OSCAR-10 passband just tune through the passband. The current Australian alligators on OSCAR-10 who migrate to OSCAR-12/JAS-1 are going to achieve significant notoriety when they shutdown the transponders.

Enuf said! 11

JAS-1 CE Telemetry Calibration Equations

Format of CW (at 20 WPM) telemetry on:

<table>
<thead>
<tr>
<th>DAY</th>
<th>ORBIT</th>
<th>U.T.C.</th>
<th>LAT</th>
<th>LON</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st October</td>
<td>2482</td>
<td>1121:49</td>
<td>-14</td>
<td>152</td>
</tr>
<tr>
<td>2nd October</td>
<td>2483</td>
<td>2301:20</td>
<td>-13</td>
<td>327</td>
</tr>
<tr>
<td>3rd October</td>
<td>2484</td>
<td>0405:51</td>
<td>-14</td>
<td>142</td>
</tr>
<tr>
<td>4th October</td>
<td>2485</td>
<td>2228:23</td>
<td>-14</td>
<td>318</td>
</tr>
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<table>
<thead>
<tr>
<th>SYDNEY</th>
<th>ADELAIDE</th>
<th>PERTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st October</td>
<td>2486</td>
<td>0959:54</td>
</tr>
<tr>
<td>2nd October</td>
<td>2487</td>
<td>2139:25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEO</th>
<th>DEG</th>
<th>DEG</th>
<th>DEG</th>
<th>DEG</th>
</tr>
</thead>
<tbody>
<tr>
<td>25th October</td>
<td>2500</td>
<td>1614:38</td>
<td>-13</td>
<td>262</td>
</tr>
<tr>
<td>26th October</td>
<td>2501</td>
<td>1627:56</td>
<td>-13</td>
<td>216</td>
</tr>
<tr>
<td>27th October</td>
<td>2502</td>
<td>1640:59</td>
<td>-13</td>
<td>187</td>
</tr>
<tr>
<td>28th October</td>
<td>2503</td>
<td>1728:01</td>
<td>-12</td>
<td>177</td>
</tr>
<tr>
<td>29th October</td>
<td>2504</td>
<td>1803:09</td>
<td>-12</td>
<td>149</td>
</tr>
<tr>
<td>30th October</td>
<td>2505</td>
<td>2142:40</td>
<td>-12</td>
<td>324</td>
</tr>
</tbody>
</table>

ACKNOWLEDGMENTS

Contributions this month are courtesy Bob VK3ZBB, Graham VK5AGR, and AMSAT Australia.

OSCAR-10 STATUS

As reported in last months column, OSCAR had been affected by radiation exposure and had suffered operational difficulties. Through the diligent work of Karl DJ4ZC, in rewriting the OSCAR-10 software, a new operating system, IPS-C4, was uploaded to the spacecraft to return it to an operational condition.

At the time of preparation of this column the onboard computers memory has had another cosmic "hit" and the inoperational condition is with us again. It is hoped that by the time you are reading this, the spacecraft will once again be operational.

SUCCESSFUL LAUNCH OF OSCAR-12/
JAS-1
The Analog Telemetry Data

The number in each channel represents a two digit Decimal number; i.e. in the range 00 to 99. Example: 123 -> number is 23 (decimal) -> N = 23.

Parameter

<table>
<thead>
<tr>
<th>Ch.</th>
<th>Parameter</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Total Solar Current</td>
<td>20.0 (N + 4.0) mA</td>
</tr>
<tr>
<td>1B</td>
<td>Battery Charge/Discharge</td>
<td>40.0 (N + 46.0) mA</td>
</tr>
<tr>
<td>1C</td>
<td>1 Battery Voltage</td>
<td>(N + 4) x 0.2 V</td>
</tr>
<tr>
<td>1D</td>
<td>1 Half-Battery Voltage</td>
<td>(N + 4) x 0.098 V</td>
</tr>
<tr>
<td>2A</td>
<td>Bus Voltage</td>
<td>(N + 4) x 0.02 V</td>
</tr>
<tr>
<td>2B</td>
<td>2 + 5V Reg Voltage</td>
<td>(N + 4) x 0.08 V</td>
</tr>
<tr>
<td>2C</td>
<td>JTA Power Output</td>
<td>2* (N + 4) x 0.016 mA</td>
</tr>
<tr>
<td>2D</td>
<td>Calibration Voltage #1</td>
<td>(N + 4) / 50 V</td>
</tr>
</tbody>
</table>

Status Telemetry Data Format

The number in each channel represents two digit Octal number, whose range is between 00 and 37 (0 to 31 in decimal, 00 to 1F in hexadecimal).

Therefore, only five lower bits are valid as data. Each bit represents the various status shown in the following table.

- Bit 0 is LSB (Least Significant Bit)
- Bit 4 is MSB (Most Significant Bit).

Example: 432 -> 32 (Octal) = 1010 (Binary)

Ch Bit Item 1 0

| 4A | JTA Power                      | Off                         |
| 4B | JTD Power                      | Off                         |
| 4C | 1 ENG Data                      | Off                        |
| 4D | 2 ENG Data                      | Off                       |
| 4E | Memory Select Bit 1 (MSB)      | Off                       |
| 4F | Solar Panel #1 Lit             | Dark                       |
| 5A | Memory Select Bit 2 (LSB)      | On                         |
| 5B | Solar Panel #2 Lit             | Dark                        |
| 5C | Memory Unit #0 On Off          | On                          |
| 5D | Computer Power On Off          | Off                         |
| 6A | ENG Data #7                     | On                          |
| 6B | ENG Data #6                     | On                         |
| 6C | ENG Data #5                     | On                          |
| 6D | ENG Data #4                     | On                         |
| 6E | ENG Data #3                     | On                         |
| 6F | ENG Data #2                     | On                         |
| 7A | ENG Data #1                     | On                          |
| 7B | ENG Data #0                     | Off                         |
| 7C | Memory Select Bit 2 (MSB)      | Off                       |
| 7D | Solar Panel #2 Lit             | Dark                       |
| 7E | Solar Panel #1 Lit             | Dark                       |
| 7F | Memory Unit #0 On Off          | On                          |
| 8A | Computer Power On Off          | Off                         |
| 8B | ENG Data #7                     | On                          |
| 8C | ENG Data #6                     | On                          |
| 8D | ENG Data #5                     | On                          |
| 8E | ENG Data #4                     | On                          |
| 8F | ENG Data #3                     | On                          |
| 9A | ENG Data #2                     | On                          |
| 9B | ENG Data #1                     | On                          |
| 9C | ENG Data #0                     | Off                         |

JAS-1 PSK Telemetry Calibration Equations

JAS-1 Telemetry Data Format

FF = Frame Identifier
  RA: Realtime Telemetry - ASCII
  RB: Realtime Telemetry - Binary
  SA: Stored Telemetry - ASCII
  SB: Stored Telemetry - Binary
  MD Message #0
  MD Message #1
  MD Message #2
  MD Message #3
  MD Message #4

YY/MM/DD = Date
  HH:MM:SS = Time (UTC)

The following is valid only for RA and SA frames.
JAS-1 Telemetry Calibration Equations

<table>
<thead>
<tr>
<th>CH</th>
<th>ITEM</th>
<th>EQUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Total Solar Array Current</td>
<td>1.91 ( (N - 4) \text{mA} )</td>
</tr>
<tr>
<td>01</td>
<td>Battery Voltage</td>
<td>N ( \times 0.020 \text{V} )</td>
</tr>
<tr>
<td>02</td>
<td>Hall-Battery Voltage</td>
<td>0.0037V</td>
</tr>
<tr>
<td>03</td>
<td>Bus Voltage</td>
<td>0.0192V</td>
</tr>
<tr>
<td>05</td>
<td>5 V Regulator Voltage</td>
<td>0.00572V</td>
</tr>
<tr>
<td>06</td>
<td>5 V Regulator Current</td>
<td>0.00572A</td>
</tr>
<tr>
<td>07</td>
<td>+10 V Regulator</td>
<td>0.0118V</td>
</tr>
<tr>
<td>08</td>
<td>JTA Power Output</td>
<td>5.1 \times 0 -158 \text{mW}</td>
</tr>
<tr>
<td>09</td>
<td>JTA Power Output</td>
<td>5.4 \times 0 -156 \text{mW}</td>
</tr>
<tr>
<td>10</td>
<td>Calibration Voltage</td>
<td>0 \text{V}</td>
</tr>
<tr>
<td>11</td>
<td>Offset Voltage</td>
<td>0 \text{V}</td>
</tr>
<tr>
<td>12</td>
<td>Battery Temperature</td>
<td>0.139 ( (N - 889) \text{DegC} )</td>
</tr>
<tr>
<td>13</td>
<td>JTD Temperature</td>
<td>0.139 ( (N - 889) \text{DegC} )</td>
</tr>
<tr>
<td>14</td>
<td>Baseline Temperature</td>
<td>0.139 ( (N - 889) \text{DegC} )</td>
</tr>
<tr>
<td>15</td>
<td>Baseline Temperature</td>
<td>0.139 ( (N - 889) \text{DegC} )</td>
</tr>
<tr>
<td>17</td>
<td>Baseline Temperature</td>
<td>0.139 ( (N - 889) \text{DegC} )</td>
</tr>
<tr>
<td>18</td>
<td>Temperature Calibration</td>
<td>0 \text{N}</td>
</tr>
<tr>
<td>19</td>
<td>Temperature Calibration</td>
<td>0 \text{N}</td>
</tr>
<tr>
<td>20</td>
<td>Felec Temperature</td>
<td>0.38 ( (N - 864) \text{DegC} )</td>
</tr>
<tr>
<td>22</td>
<td>Facet Temperature</td>
<td>0.38 ( (N - 864) \text{DegC} )</td>
</tr>
<tr>
<td>23</td>
<td>Facet Temperature</td>
<td>0.38 ( (N - 865) \text{DegC} )</td>
</tr>
<tr>
<td>24</td>
<td>Facet Temperature</td>
<td>0.38 ( (N - 868) \text{DegC} )</td>
</tr>
<tr>
<td>25</td>
<td>Temperature Calibration</td>
<td>0 \text{N}</td>
</tr>
<tr>
<td>26</td>
<td>Temperature Calibration</td>
<td>0 \text{N}</td>
</tr>
</tbody>
</table>

JAS-1 System Status Telemetry Bytes

<table>
<thead>
<tr>
<th>CH</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Spare (TBD)</td>
</tr>
<tr>
<td>28</td>
<td>Spare (TBD)</td>
</tr>
<tr>
<td>29</td>
<td>Memory Unit # 0 error count</td>
</tr>
<tr>
<td>30</td>
<td>Memory Unit # 1 error count</td>
</tr>
<tr>
<td>31</td>
<td>Memory Unit # 2 error count</td>
</tr>
<tr>
<td>32</td>
<td>Memory Unit # 0 error count</td>
</tr>
<tr>
<td>33</td>
<td>Memory Unit # 1 error count</td>
</tr>
<tr>
<td>34</td>
<td>Memory Unit # 2 error count</td>
</tr>
</tbody>
</table>

JAS-1 Binary Status Data Points

<table>
<thead>
<tr>
<th>CH</th>
<th>ITEM</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>JTA Power</td>
<td>On</td>
</tr>
<tr>
<td>31</td>
<td>JTD Power</td>
<td>On</td>
</tr>
<tr>
<td>32</td>
<td>UVC Status</td>
<td>On</td>
</tr>
<tr>
<td>33</td>
<td>32c UVC Level</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>Main Relay</td>
<td>On</td>
</tr>
<tr>
<td>35</td>
<td>Engineering Data # 1</td>
<td>Tric</td>
</tr>
<tr>
<td>36</td>
<td>Battery Status</td>
<td>Tric</td>
</tr>
<tr>
<td>37</td>
<td>Battery Logic</td>
<td>Tric</td>
</tr>
<tr>
<td>38</td>
<td>Engineering Data # 2</td>
<td>Bit (1 LSB)</td>
</tr>
<tr>
<td>39</td>
<td>Engineering Data # 3</td>
<td>Bit (2 MSB)</td>
</tr>
<tr>
<td>40</td>
<td>Memory Unit # 0</td>
<td>Off</td>
</tr>
<tr>
<td>41</td>
<td>Memory Unit # 1</td>
<td>Off</td>
</tr>
<tr>
<td>42</td>
<td>Memory Unit # 2</td>
<td>Off</td>
</tr>
<tr>
<td>43</td>
<td>Memory Select</td>
<td>Bit (1 LSB)</td>
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<tr>
<td>44</td>
<td>Memory Select</td>
<td>Bit (2 MSB)</td>
</tr>
<tr>
<td>45</td>
<td>Engineering Data # 4</td>
<td>Off</td>
</tr>
<tr>
<td>46</td>
<td>Engineering Data # 5</td>
<td>Off</td>
</tr>
<tr>
<td>47</td>
<td>Solar Panel # 1</td>
<td>Lit</td>
</tr>
<tr>
<td>48</td>
<td>Solar Panel # 2</td>
<td>Lit</td>
</tr>
<tr>
<td>49</td>
<td>Solar Panel # 3</td>
<td>Lit</td>
</tr>
<tr>
<td>50</td>
<td>Solar Panel # 4</td>
<td>Lit</td>
</tr>
<tr>
<td>51</td>
<td>Solar Panel # 5</td>
<td>Lit</td>
</tr>
<tr>
<td>52</td>
<td>Engineering Data # 6</td>
<td>CPU Status Source</td>
</tr>
<tr>
<td>53</td>
<td>Engineering Data # 7</td>
<td>TLM</td>
</tr>
</tbody>
</table>

JAS-1 Packet BBS User Interface Information

Mailbox Commands (Basic users training)

1. Summary
2. Available commands

F: List files addressed to all or to current user
H: Help
K: Kill file/s
M: List file/s to/from current user
R: Read files
W: Write file

1.2 Command syntax

The general format is: `<command letter> <space> <argument>`. At least one blank is required between the `<command letter>` and `<argument>`. Usage: `.` Command Prompt

JAS-1 Mailbox supplies a prompt `JAS-1` with no CR or LF to indicate that the system is ready to accept a command from the user.

A user can "type ahead" commands while JAS-1 is sending messages or data to the "F" user. JAS-1 will execute the commands in the waiting queue later.

3. Commands

3.1 The "F" Command

F = FILES. Shows the latest 10 files the first time it is entered during a session. A free form command list will be displayed. A message posted to multiple users has "To" in its 'To' destination field. See also the "M" command described below.

example:

```
JAS>F
```

3.2 R <file#,1>, <file#2>, <file#,3>, ...

R = READ/ Read file/s (messages) specified by file number/s you got from the "F" command. Up to eight files can be specified. The part of the command line in parenthesis is ignored.

example:

```
JAS>R <file #1>, <file #2>, <file #3>, ...
```

3.3 K = Kill Delete file/s (messages) specified by file numbers. The <file #> is the same one described in R command. Up to eight files can be specified. A user can only delete files addressed solely to himself (ie not to multiple users) or files he posted.

3.5 H = HELP Entering H <cmd> gives additional information on that command. Entering only H will give a list of all available commands.

3.6 M = Mine. List the latest 10 files (messages) that are either to or from the current user. Additional M commands list additional active messages. This command will be useful to save channel time when the user only wants to see his messages.

JAS > M

3.7 N = NO Date from to Subject

JAS > N

SATELLITE ACTIVITY FOR THE MONTH OF JUNE 1986

1. LAUNCHES

The following launches announced have been received:

```
1988-042A (1758) Cosmos 1748 June 06 USSR
1988-042B (1758) Cosmos 1749 June 06 USSR
1988-042C (1758) Cosmos 1750 June 06 USSR
1988-042D (1758) Cosmos 1751 June 06 USSR
1988-042E (1758) Cosmos 1752 June 06 USSR
1988-042F (1758) Cosmos 1753 June 06 USSR
1988-042G (1758) Cosmos 1754 June 06 USSR
1988-042H (1758) Cosmos 1755 June 06 USSR
1988-042I (1758) Cosmos 1756 June 06 USSR
1988-042J (1758) Cosmos 1757 June 11 USSR
1988-042K (1758) Cosmos 1758 June 12 USSR
1988-042L (1758) Cosmos 1759 June 13 USSR
1988-042M (1758) Cosmos 1760 June 19 USSR
```

2. RETURNS

During the month 39 objects decayed including the following satellites:

```
1988-032A Cosmos 1739 June 07 USSR
1988-032B Progress 26 June 23 USSR
1988-032C Soyuz TM May 30 USSR
1988-032D Soyuz TM June 04 USSR
1988-040A Cosmos 1748 June 12 USSR
1988-040B Cosmos 1746 June 12 USSR
1988-041A Cosmos 1747 June 12 USSR
1988-041B Cosmos 1757 June 23 USSR
```

AMATEUR RADIO, October 1986 - Page 59
HI HI from space . . .
Eight minutes later.

Wednesday, August 13, had amateur radio operators around the world listening anxiously for the first signs of life from the latest amateur radio satellite.

Amateurs have used the Morse code letters HI for decades to indicate laughter, probably because of the sound of the Morse letters: di di dit dit dit.

It was fitting, therefore, that the satellite radio transmitter would first send this message back to earth. Launched by the controlling body of amateur radio in Japan, the Japanese Amateur Relay League, JAS-1 Satellite was due to blast into space from the Tanega-shima Space Centre at 2031 UTC.

The satellite was carried as payload on the test launch of Japan's H-I launcher and, as such, did not attract the many millions of dollars fees commanded by other methods of launching.

Even so, the satellite itself had to be funded entirely by amateur operators. With separation from the launch vehicle over Chile at one hour 10 minutes after launch, the first pass over Sydney should have been at 2248 hours UTC (0848 am).

Licensed radio amateurs employed by Dick Smith Electronics head office in Sydney set up a special station using the DSE Amateur Radio Club's call sign, VK2DRS, to listen out for the telemetry signals from JAS-1, indicating all had gone well.

The JAS-1 satellite includes a beacon which continuously transmits Morse data on approximately 435.795 MHz, in the 70 cm amateur band.

Operators at VK2DRS had some anxious moments as 2248 UTC came and went with no signal of signals from space.

Then, some eight minutes later, at 2256, came the sound of laughter everyone was waiting for: HI HI from space...

The sound of Morse letters: di di dit dit dit.

A unique feature of the J24's design allows it to copy on both mark and space tones, which greatly improves copy during adverse conditions. A built-in automatic noise limiter helps suppress static crashes and provides better copy whilst a Normal/ Reverse facility eliminates returning white noise through various RTTY speeds and shifts.

Other features also include a +250 volts DC power output for direct drive to a RTTY machine, a speaker, microphone and an easy to use two LED tuning indicator system.

For further information please contact the Australian Distributor, GFS Electronic Imports, 17 Mecken Road, Mitcham, Vic. 3132. Phone: (03) 873 3777.

RECEIVE SIGNALS FROM AROUND THE WORLD ON A SCANNER
With the addition of a small $99 box, your programming scanner can now listen to signals from the other side of the globe.

Manufactured by GFS Electronic Imports, the new Worldsmap shortwave and broadcast converter for programmable scanning receivers (complete with a supplied three metre wire antenna), can add hours of listening pleasure to your scanning operations.

The Worldsmap is smaller than a cigarette packet, runs from its own in-built nine volt battery and simply plugs into the antenna socket of the scanner. The host scanner can then cover an additional frequency range from 300 KHz to 2.5 MHz. This makes it possible to listen to local AM broadcast stations as well as hundreds of overseas AM broadcasters who use the shortwave band.

The Worldsmap's output range is from 120-300 to 145.000 MHz so that, for example, a 7.500 MHz shortwave signal would be found on 127.500 MHz.

For further information contact GFS Electronic Imports, 17 Mecken Road, Mitcham, Vic. 3132. Phone: (03) 873 3777.

A CONNECTOR THAT ABLY ACCOMMODATES BIG AMP OUTPUTS
A new audio connector system from Utilux has set an industry standard by providing a solution to the problems of amplifier-speaker connection that have been growing since the 60s with the growth in loudspeaker wattage.

The Utilux UX series of high power audio connectors has the ability to reliably transmit signals with a dynamic range from micro-volts to a hefty 30 amperes.

Since the 60s when audio amplifiers were considered "low level signal" — around 20 watts — audio amplifier output powers have been gradually increasing to today's levels, commonly exceeding 1000 watts and often reaching 3600 watts.

Over the years, amplifier output connectors have remained largely unchanged. Increasingly powerful and sophisticated equipment has continued to bear the inadequacies of banana plugs and phone jacks developed in the "low signal 60s." This has meant not only signal impedance, but electrical safety standards were often dangerously compromised by very high amperage.

The UX series provides high current, large cable (8 x 14 mm) capacity with no risk of shorting or of electrocution. Terminated to 10 AWG cable, connector temperature does not rise above cable temperature even with 30 amperes continuous load.

The system comprises two parts — a cable end connector — UX100 — and a panel mount connector — UX500. To accommodate existing standards, the UX500 has the same cutout profile as an XLR type female socket. Two UX100 connectors can be mated for cable-to-cable connection, or one UX100 can be mated with one UX500 for cable-to-equipment connection.

A genderless format cleverly defies Murphy's Law in either connection by ensuring correct polarisation and the impossibility of a mismatch.

Amplifier to speaker connections in the UX system are positively identified by a distinctive oval shape measuring 17 x 24 mm.

The UX system can be easily assembled using a soldering iron and screwdriver. Contacts are supplied separately, soldered to the cable by the user, and then snapped into the connector body. This eliminates equipment assembly and avoids melting the insulation when soldering to heavy cable.

When assembled, the connectors provide the highest level of safety with total insulation between contacts and the metal shell.

The connector contacts are formed from a copper-iron alloy and silver-plated (or gold-plated to special order) with a total contact area of 30 mm squared and solder cup for up to 3 mm diameter conductors. As specified in IEC safety standards, these contacts cannot be shorted during connection as they are finger inaccessible to prevent electric shock.

Inherent in the connector system is also a superior robustness, combining rugged die-cast
Pounding Brass

Marshall Emm VK6SN
Box 389, Adelaide, SA, 5001

Hello again, and welcome to October (he says cheekily, writing in early August!). Well, first of all a note of congratulations to all the winners of the recent CW Sprint taking place on Saturday, November 15. The full rules should be in the Contests Column this month, and I am sure you will agree that the competition is possible has been done to Keep It Simple. Please think seriously about having a bash at it, even if you are not a "contestor." It will not take a lot of time, it should be good fun, and certainly provide a bit of a challenge.

Just a bit of food for thought ... in drafting the rules I asked for, and got, the much appreciated assistance of Ian VX6FG and the Federal Contest Manager. There was only one point we disagreed on, and in the finish we "agreed to disagree." That is the format of the serial number between each exchange. You will note that the rules say that the serial number must be a three digit number but can start with any number. Ian feels very strongly that serial numbers should start with 001 in all cases.

My reasons for preferring a start at any number are threefold. First, a zero takes a long time to send in Morse. Next, operators, and specifically not all of the slower ones, use the letter "T" to represent zero, so a start at, say 500, can save a bit of time where zeros are sent. Second, the CRS constitutes one of the few stations with a variety of stations, it is more like amateur radio than any other communication field. With the dependence on CW and the second, the CRS constitutes one of the few services (telegrams, telephone, telex, facsimile) available overseas) but when you put a kilowatt into a CRS antenna it definitely gets radiated. The Adelaide Radio antenna farm covers 66 acres. It is a long way from the city, and it is sometimes disturbed from 70 foot (20 metre) towers, and in the middle of it all is a 150 foot (46 metre) insulated, top-loaded tower which is itself the MF vertical.

The other antennas comprise fans, folded dipoles, and cage quads. There is a copper earth grid, with all off, there are legal constraints against anyone building anything in the vicinity of the station, which is in farmland separated by hills from Adelaide, so there are no problems with RFI.

In case the 240 volts supply fails a diesel generator can supply adequate power for sustained operation at full power. It is the size of a small car, and if it were a little more portable, it think it would go well in the John Moyle!

The 600 ohm transmission lines run from the station to separate receiver and transmitter gentries, where baluns match them to 70 ohm coaxial cable for the rest of the distance (8 km in the case of the receiving antennas). All in all, Adelaide Radio is admirably located for the operation of commercial communications services (telegrams, telephone, telex, facsimile) between Australia and other countries. It operates in parallel with Telecom Australia which has the responsibility for the operation of the Coast Radio Stations, but you will be pleased to know that all of the operators and staff regard Maritime Safety as their primary mission, and commercial traffic as secondary.

Adelaide Radio has two operators on duty during the day, and one at night, and all emergency channels are monitored. The area of responsibility extends from the mid-point between Melbourne and Adelaide to half-way across the Great Australian Bight, and there is some overlap with neighbouring shore stations, 15 of which effectively ring Australia and provide 24-hour communications with ships at sea. Thus the CRS is usually the first to hear of any maritime emergency, and can immediately contact Coastguards, Police, and the national search and rescue centre in Canberra.

In its commercial role, a CRS station can connect any ship at sea within its area of coverage, with any person who can be reached by telephone, telegraph, or telex anywhere in the world.

The equipment necessary for Adelaide Radio's mission would bring tears to any amateur's eyes. Given top-line receivers for MF, HF, and VHF, the transmitting power available to the single receiver can be selected from 2 kw transmitter on MF, and three 1 kw, fully synthesised transmitters on HF.

Maybe that does not sound like a lot of power (after all, 3 kw linear on the amateur bands are available overseas) but when you put a kilowatt into a CRS antenna it definitely gets radiated. The Adelaide Radio antenna farm covers 66 acres. It is a long way from the city, and it is sometimes disturbed by the various buildings anything in the vicinity of the station, which is in farmland separated by hills from Adelaide, so there are no problems with RFI.

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The 600 ohm transmission lines run from the station to separate receiver and transmitter gentries, where baluns match them to 70 ohm coaxial cable for the rest of the distance (8 km in the case of the receiving antennas). All in all, Adelaide Radio is admirably located and equipped to fulfill its mission. The only negative aspects were from the operator's standpoint, with fairly "antique" consoles, and the very common problem of having to upgrade technologies to support computers, satellites and so on. But the major plus is that they are there, and they make some traffic money for OTC, but far more importantly, they provide a lifetime for all the ships at sea.

CU next month.

—Reprinted from ham radio, July 1988

WAFERSCALE INTEGRATION

This technique uses the surface of a silicon wafer to implement an entire functional capacity. Experiments with memory and all relevant I/O functions, a "silicon" hard disk with 20 MB of storage, RAM speed, and all disk controller functions on a single wafer.

Waferscale integration promises to make very complex functions available in a single package. But this improvement is not without peril. Because the large amount of circuitry and the extensive processing required on such devices, any mistake in fabrication results in a very expensive piece of scrap. Also, the large number of circuits and functions on a single wafer makes WSI seem to justify the complexities of making such devices, and within the next few months the first few WSI products are expected to be announced.

—Reprinted from ham radio, July 1988

Alloy construction with positively latch locking and a super-strength stainless-steel bar clamp. Both flat and round cable can be secured to withstand up to 50 Newton pull out force.

Offering audio professionals a connection system of the same high calibre as their amplifiers and loudspeakers, the Utilux UX series provides not only a long sought quality but an opportunity to finally standardise this area of common practice.

For further information please contact Utilux Pty Ltd, 14 Commercial Road, Kingsgrove, NSW, 2208.

LASERS TO ETCH MICROCHIPS

In the traditional process for manufacturing ICs, as many as 100 individual steps may be required. Each step increases the risk that the finished product will contain some flaw that renders the chips unusable. Depending on the size and complexity of the chip, less than half of the finished wafer may yield acceptable chips, leaving the rest of the chips to recover the entire cost of fabrication.

Not surprisingly, IC manufacturers are constantly seeking ways to improve yield and reduce costs. One technique that employs a photo-etching device scans the surface of a silicon wafer in the presence of certain gases. Under static conditions, these gases have no affect on the substrate. However, the laser, however, decomposes the gases into compounds that define active elements and interconnects by etching away unwanted material or by deposition into the substrate. The source and drain regions of a transistor are made by dopin silicon with phosphorus, which the laser creates by breaking molecules of phosphine gas. Hydrogen chloride, which serves as an etchant, is activated by the thermal energy of the laser beam. Interconnects on the chip are made by similarly decomposing gases that contain tungsten, nickel, and polysilicon.

One of the major incentives for this new method is a national program, led largely by the Department of Defences and Energy, to develop new classes of super-computers. Much of this work has been done at the Lawrence Livermore National Laboratory, where experiments indicate that the technique can produce as many as 1000 transistors per second. At this rate, it would be possible to fabricate super-computer chips—consisting of about 100 000 transistors each—at the rate of 10000 per hour.

Other exciting possibilities include repairing damaged high-value chips and turning a new design into a prototype chip in one day or less, as opposed to today's turnaround time of one to four weeks.

—Reprinted from ham radio, July 1988

AMATEUR RADIO, October 1986 - Page 55
WAGGA CONVENTION
As mentioned last month, the Wagga Wagga Convention is to be held over the weekend, October 25 and 26, 1986. It is expected to be an interesting and rewarding weekend for all who attend.

The program commences early on Saturday with displays, fax and hidden transmitter hunts, vintage equipment for sale, steam engines and trade displays. There will be attractions to interest amateurs, SWLs, hobbyists and family members. Several of the leading equipment suppliers have booked stands and shall be displaying the most modern equipment available today.

Demonstrations of Packet Radio, Satellite TVRO, AUSSAT, ATV, and RTTY have been arranged and it is hoped to have people in attendance who will be able to give information and answer questions on the various aspects of each display.

The Conference Dinner will be held on Saturday evening. This year, the guest speaker for the evening will be Roger Harrison VK2ZTB. A private room has been reserved at a local club for the dinner, cost is $14 per head. Bookings are required early to ensure a vacancy. Bookings close on the Wednesday prior to the convention.

Cheques should be forwarded to PO Box 294, Wagga Wagga, NSW. 2650. Late bookings or inquiries to T&vin Cox VK2ZKV, (069) 26 1284 or Peter Clee VK2KZJ, (069) 26 1532.

Events and activities will continue on the Sunday with prize giving and closure timed early to get those for whom it will be necessary to travel long distances on the homeward journey.

Accommodation, on site, is available in bunks, tent or caravan sites. This is available free of charge but reservations are required on a first come, first served basis and payment of the registration fee. A limited number of bunks and sites are available.

Accommodation is also available in many of the numerous motels in Wagga Wagga. A number of motel units have been booked at this time, however, it is not foreseen that there should be any shortage of this type of accommodation. Reservations can be made by contacting their local motel. A special price will be available at selected motels.

Tours of the city and local attractions have been arranged for those not interested on the amateur radio side of things. Shops in Wagga are all open on Saturday mornings until 12.00 noon, and remain open to 4.00 pm.

Registration fee will be $10 per participant or family registration. The site for the convention is OURA, located 10 kilometres from Wagga Wagga. Communications on the day will be via repeaters 146.750, 438.675 MHz. or on HF 3.613, 7.165 or 28.490 MHz.

The club holds a regular schedule on 7.165 MHz at midday on Sundays. More information may be obtained, if required, at that time.

—Peter Clee VK2KZJ, Publicity Officer, Wagga Convention

WESTERN AND NORTHERN SUBURBS'

The Western and Northern Suburbs Amateur Radio Club Incorporated, (previously the Western Suburbs Radio Club) holds its general meetings at 7.30 pm, on the first Friday each month at the Ern Rose Memorial Pavilion, Seaver Grove, Reservoir.

Club nets are held each Tuesday on 145.450 MHz. VHF and 438.675 MHz. UHF. The net starts at 7.30 pm. All interested are invited to participate.

The Club meetings are held at the Penguin High School at around 9.45 am and proceed to the walking track in four wheel drives and a utility. A variety of materials were then transported to the peak via the tracks. The return was by bus, leaving the peak at approximately 4.00 pm. The return was by bus, leaving the peak at approximately 4.00 pm.

 זNOCIVE LICENCE

Now you have joined the ranks of amateur radio, why not extend your activities?

THE WIRELESS INSTITUTE OF AUSTRALIA (N.S.W. DIVISION)
conducts a Bridging Correspondence Course for the AOC and LAOCExaminations

Throughout the course, your papers are checked and commented upon to lead you to a SUCCESSFUL CONCLUSION.

For further details write to:

THE COURSE SUPERVISOR
W.I.A.
PO BOX 1066
PARRAMATTA, NSW. 2150
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417
11 am to 2 pm M to F and 7 to 9 pm Wed

FAX FACTS
Demand for facsimile machines in Australia continues to rise and is expected to reach 30,000 in use this year and an estimated 100,000 by 1990.

Industry sources say businesses are rapidly recognizing the FAC as an inexpensive and quick means of document exchange. It takes only 2 to 3 seconds to send an A4 document by FAX for the cost of a local call, or STD for long distance, compared with Telex taking five minutes at a cost of $2.

TEST EQUIPMENT
AUSTRALIA'S LARGEST RANGE OF SECOND-HAND:

Heawlett Packard
Tekronix
Marconi
Solastron
Boontoon
BWD
Brue & Kjaer

Oscilloscopes, Spectrum Analyser, Multi-Meters—Wide range of amateur and communications equipment—valves, coaxial connectors and test accessories. Repairs and service to all makes and models.

ELECTRONIC BROKERS
AUSTRALASIA
20 Cahill Street, Dandenong, Vic. 3175.
Phone: (03) 793 3998

A Call to all
-Holders of a

NOVICE LICENCE
The key elements of the North East Radio Group (NERG) are cheek, friendliness, activity and success. It is based in Melbourne's north-east suburb, filling the geographic need for a radio club in the area.

NERG began when a number of radio amateurs, going to the annual Queen's Birthday Weekend Mount Gambier Radio Convention, in 1983, decided to form a club with the pure aim of winning the Convention's inaugural trophy.

The founders of the Group include Greg Williams VK3VT, Ewen Templeton VK3BMV, Paul and Brenda McMahon VK3BZQ, Geoff Hudson VK3GH, Ian Bryce VK3BRY, Greg Ahpee VK3BDG, Gary Carlson VK3KBL, John and Victoria Griffin VK3ZGT and VK3BNK, and Hank De Jong VK3BL.

Along with their blatant, premeditated scramble for club status, they had the cheek to pick a name not unlike the Convention's host club, the South East Radio Group (SERG).

NERG Secretary, Greg VK3VT says: "It was a stinger to the SERG — there's certain a friendly rivalry between the two groups now."

NERG won the Mount Gambier Convention Club Trophy in 1983, and again in 1984 — then SERG dropped it from their program! The Club Trophy was awarded to the club with the highest overall points score in normal events being held, plus two others — antenna raising and a wheelbarrow race.

NERG's winning streak continued at Mount Gambier with Greg VK3VT, winning the overall individual points score in 1985 and Richard VK3CRI/7CG, the 1986 winner.

The Group's other successes include the John Moore Memorial Field Day Contest, which it first entered in 1984 to be runners-up, but in each year since has been section winner — and top scorer in 1986.

NERG club meetings began in the Montmorency High School in 1983. An attempt is made to keep administration low and activity high — and stay a friendly club.

The NERG attempted to work the Astro-Amateur, Owen Garriot W5LF, in December 1983, only to be disappointed. They then produced an Owen Garriot dummy and publicised through the VK3BW1 broadcast for anyone who missed the Astro-Amateur to come to a NERG meeting and shake the dummy's hand.

Occasionally NERG has a construction night when they get someone who has made a particular item to come along and show everyone else.

The Victorian Fox-hunt Champion for the past eight years has been a NERG member and it has been said that NERGs are Australia's supremos of Direction Finding. The Group hold quarterly Sunday Afternoon Fox-hunts, mainly on HF for those who want to get their feet wet in DFing. However, one readily suspects they use these trials to keep up their level of skill.

Planning is advanced for the 1987 Victorian Foxhunt Championships. In February, which the Group says it is again organising to find the top Victorian Fox-hunter and to have a good time.

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Novices classes were started in 1984, because the Group felt there was a need in that area and to simply promote amateur radio. The classes produced seven novices, and therefore seven new members in the first year, and there is a class of five in 1986.

Promoting the hobby is something the NERG do well and it has been the only club to volunteer and operate the Museum Demonstration Station, VK3AM, on a regular basis.

One thing about the NERG's 50 members is that most are active in club affairs, and are not just on the books as financial members.

Their approach to JOTA is somewhat unique. It set up a number of booths containing activities such as direction finding, sniffer hunting, radio teletype, HF operating and Morse code. The idea is for each booth (event) points are awarded and the top scoring scout troop wins the award for the day. This way, they learn a little more about amateur radio than just operating a microphone.

The Group was incorporated in 1985 due to the need to be a legal entity to enter into a lease agreement for the VK3BW1.

The NERG is moving quickly to establish its six metre repeater, VK3RMH, at Wattle Glen, as there are a number of six metre operators within the Group, and it is hoped that the repeater will encourage use of the band.

And, what about the Group's emblem? Greg says: "We all thought that what a NERG would look like — a nice cuddly character who is fun to be with."

The Group, heard on air as VK3CNE, also issues a bimonthly newsletter NERG News to keep its members informed.

For further information contact NERG, PO Box 270, Greensborough, Vic. 3088 or phone Greg Williams VK3VT, (03) 606 7478 BH or (03) 435 7870 AH.

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Any "RARE" recordings of amateur radio contacts for Volume 2 of "THE SOUNDS OF AMATEUR RADIO."

We are particularly interested in recordings of contacts on bands not now available to Australian amateurs; eg 112 MHz, 286 MHz, etc. We are also looking for recordings of unusual contacts; eg from Balloons, Aircraft, Submarines, etc.

Any recording format can be handled from cassettes to CD.

In the first instance please write to:

PETER WOLFENDEN VK3KKAU
c/- FEDERAL OFFICE
PO BOX 300
CAULFIELD SOUTH VIC 3162.

PLEASE DO NOT SEND RECORDINGS.

Copies of Volume 1 "THE SOUNDS OF AMATEUR RADIO" are still available for $7.00, plus post and packaging.

Inquire at your Divisional Bookshop or the Federal Office.

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SUPER-MAGNET MAKES SMALLER MOTORS

An essential component of many motors is the large, heavy permanent magnet associated with the non-excited elements of the motor. Magnequench, a new product developed by General Motors, is about 25 percent stronger than any conventional magnets in all the control motors of a car.

Currently, the most widely used high-power magnets, composed of samarium-cobalt, are expensive and difficult to manufacture. But the new material is so low in cost that it is being used by manufacturers of various types of motors.

Because samarium-cobalt is the material sometimes used to make very small, high-performance loudspeakers, it should be interesting to see if the speakers manufacturers put in our HTs get any better as supermagnets become more widely available.

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Reprinted from ham radio July 1986
DIVISIONAL NEWS
A vacancy has occurred on the Divisional Council. Mary Jane Douglas VK2CMJ, who has married and moved to New South Wales, has not been able to attend meetings due to the distance it made it difficult to carry out her council duties. Best wishes and thanks to Mary Jane for the future. The “Broadcast Survey” has been ongoing and the results given over the broadcasts. A written report will be included in a future Mini-Bulletin.... The call sign VK2AWI is to be reactivated and will be used to provide identification for operation from Amateur Radio House. Scheduled activities in this coming month include the Divisional Dinner on Saturday, October 11, if the minimum booking level has been reached. Details have been given on the broadcasts and last minute information may be obtained from the office during the hours 11 am to 2 pm weekdays or on Wednesday evenings 7 to 9 pm. Telephone (02) 689 2417. Members are reminded that the latest Australian Call Book is available from the office, together with a range of amateur publications. Regrettably, the cost of making these publications available to HF and VHF members is such that JOTA will be held over the weekend October 18 and 19. Contact your local group or the Divisional Office if you can. VK2WI will be opening the address from Canberra at 2 pm Saturday if we are able to receive a strong signal to do so. The next Conference of Clubs will be held on Sunday November 2.

DAYLIGHT SAVING
A reminder that, with the change to daylight saving later this month, the VK2WI Broadcasts observe local time — that is 11 am and 7.30 pm. The VK2TTY RTTY and VK2BWI Slow Morse practice will observe UTC time. Their transmissions will shift one hour by local time.

NEW MEMBERS FOR AUGUST
A warm welcome is extended to the following amateurs who were admitted to membership at the August Council Meeting: N J Coleman VK2JKZ, North Sydney; R M Ellis VK2PCG, Lawson; D C Cowey, LN; Lindsay VK2CLL, Waunooke; C L McPherson VK2CLM, Port Macquarie; H M Pieremont VK2APD, North Epping; J B Robson VK2VUL, Edenson Park; J Sproule VK2JS, St Ives.

SOUTH WEST ZONE CONVENTION
The Wagga Amateur Radio Club advise that the Annual SWZ Field Day will be held at the same venue as last year, at the Scout Camp near Wagga, over the weekend October 25 and 26. Further details may be obtained from WARC, PO Box 294, Wagga, NSW. 2650, or via the Sunday Morning Broadcasts.

PUBLIC LIABILITY INSURANCE FOR CLUBS
These notes were prepared in mid-August and at that time the interest and response to the proposed scheme had been poor.

VK2 DIVISIONAL LIBRARY
Aub VK2AXT, the Divisional Librarian, would like to thank the following for their donation of books and magazines: VK2s OZ: NL; JTR; YTO; CO; KYS; AUE and LW. Special thanks to Mrs Court and Mrs Garland, for the donation of books from their late husbands to the library.

WICEN
This month there is the annual operation to provide safety communications to the Canoe Classic, conducted on the New South Wales River over the two metre band. This automatically prevents novices from joining in, and, in a very large state like Queensland, limits the participants to those in relatively small areas. So it is back to HF with the popular choice being 80 metres.

VK3 DIVISIONAL LIBRARY
A new service for members, which is being added to the library facilities, is a photocopying service for some of the data books. The details are still being worked out, but in essence it will be only by mail since the material has to be located and processed.

VK4 WIA Notes
Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

It is inevitable that regular nets held by clubs or a wide flung group of individuals and conducted on HF, will run into interference problems. The ideal antenna is of course VHF or UHF and the use of a linear amplifier would be beneficial. The VK4WIA broadcast frequencies are 3.605 MHz. Here is a short list of nets and times when they are on, and as the phone-patch Amateurs used to say, a clear frequency would be appreciated.

VK4 Disabled Persons Radio Club — Fridays, 0930 UTC on 3.590 MHz.

VK4 WIA Notes
Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

NEW MEMBERS
A warm welcome is extended to the following: Alan Bergman VK3CHX; A B Burgess VK3KPA; Tony Capuano VK3NT; Geoffrey Chamberlin VK3Z; Dudley Hart VK3PH; Brian Keenan VK3TT; VK3PB; I J Stanley VK3CIS; Ian Storer George Strachan VK3HS and Brian Hallam VK3DBH.

VK3 WIA Notes
Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

ILLEGAL RADAR
Components for a device to jam police radar speed guns are being sold in Melbourne and an American car magazine is offering mail order plans for a jammer.

Use of these devices could, under the Radiocommunications Act, result in fines up to $10,000, five years imprisonment, or both.
Five-Eighth Wave

One of the “perks” of being President is being invited to visit some of the affiliated clubs at their monthly meetings. Over the past couple of months, I have enjoyed meeting the SA ATV Group at their visit to the Educational Multi-Media Department, and the Adelaide Hills Amateur Radio Society at their Buy and Sell Night (from which I returned with a car load of bargains and a several of centimetres added to my waist-line from the beautiful supper the ladies provided).

More recently, I was invited to attend the Elizabeth ARC’s AGM to chair their Election of Officers, and to draw their raffle. It was an “appalling” night (weather-wise) but inside the Water Tower on Kettering Road, the atmosphere was warm and friendly. The new committee of this small, but very keen group, are as follows:

President: Trevor Lowe VK52TU
Secretary: Eddie Jennings
Treasurer: Vinc Schwinger VK52SV

and the Committee Members — Sean Quigley VK5SQ, John Cooper, and Rex Haskard VK5SH.

Yet another magnificent supper (more centimetres!) was provided by Hannah Jennings, Eddie’s wife. If you live in the Elizabeth area (or even if you do not) and would like to join a friendly group, drop in at the Water Tower on Kettering Road, opposite GMH any Wednesday night from 7.30 pm for general activities, or the first Saturday in the month for a meeting night, also from 7.30 pm. I can assure you that you will b made most welcome.

WOULD HAVE LIKED TO VISIT

One Club that I would have liked to visit in mid-Winter (although I understand that even they did not completely escape the cold weather), was the Darwin Radio amateurs. They also have a new committee comprising:

President: Bill VK5ZWM (better known, perhaps, as ’Spud’, who I am told left immediately for VK4). Was it for advice or is the job really that bad, Henry?"

The Vice-President is Barry VKBDL (who shortly afterwards was seen in Adelaide). All jokes aside, we were pleased to have you and your father with us at the Buy and Sell Night, Barry. Secretary: Larry VK8LM
Treasurer: Trevor VK8CO
Station Manager: Frank VK8FT

One member who will be sorely missed, but must deserve a well-earned rest, is Henry VK6HA. You may remember that Henry was awarded a 75th Medalion for his services to amateur radio in Darwin last year, and now, as he leaves the Committee, he has been awarded the first Honorary Life Membership ever to be given by the Club. The Club will be 20 years old in November, and Henry has served on the Committee for at least 15 of those years, not only doing the job of President, but at the same time being the QSL Bureau Manager, the Intruder Watch Co-ordinator, one of the Sunday Morning Broadcast relay operators (every week), Slow Morse Practice Operator (almost every night!), Journal (Ground Wave) deliverer/postman . . . what more can I say? Congratulations Henry, you deserve it.

WHY NOT COME UP?

At this years Clubs’ Convention, the Lower Eyre Peninsula ARC put forward a proposal that the frequency 3.579 MHz should be designated a “Home-Brew” frequency. We felt that although it was an interesting concept, it was not possible to make it ‘mandatory’ but that it should be publicised and encouraged (my apologies for having taken so long), so you Home-Brew enthusiasts, I understand that the crystals for this frequency are readily available, so why not come up and give each other a bit of encouragement.

By the time you read this it will hardly be news, but on behalf of the Divisional Council and Members, I would like to thank Arthur Tanner VK5AAR, for volunteering to take over the job of Broadcast Producer. Each person brings to the job his or her own personality and no two are ever the same, so we look forward with interest to Arth’s style of production.

OCTOBER MEETING

It has been suggested that the meeting on October 28, be one with a historical theme, and to this end it is suggested that you bring along your favourite piece of “olden day” gear (if you have one) and be prepared so say a few words about it. Also, at the June meeting, our Historian, Ray Bennett VK5RM, promised to return with a list of those years, not only doing the job of President, but at the same time being the OSL Bureau Coordinator, one of the Sunday Morning Broadcast relay operators (every week), Slow Morse Practice Operator (almost every night!), Journal (Ground Wave) deliverer/postman . . . what more can I say? Congratulations Henry, you deserve it.

JUBILEE 150 AWARDS

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Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA, 5039

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AMATEUR RADIO, October 1986 - Page 50
Over To You!

Any opinion expressed under this heading is the individual opinion of the author and does not necessarily coincide with that of the publisher.

I was just three, in May 1910, when my Mother took me downstairs into the yard on a cold, clear morning to see Halley's Comet. We had a clear view to the north-east and the Comet appeared to fill the sky.

The tail streamed out behind it as I remember on that date. Some may doubt that a three-year-old would remember it at all. I have a standing joke with my friends for 56 years: "I want to live until 1966 and see Halley's Comet again."

Well, I did, and this time I saw it 13 times — ten from my home address with binoculars (7 x 50) and the others when I was on a bus tour to western New South Wales to Coonabarabran, Jilgandra, Narrabri, and Parkes. Two places had optical telescopes.

I believe the next sighting in 76 years will be a super-flop, but just wait another 76 years and it will be a "boomber."

Arthur Mead VK2JM.
13 Salisbury Avenue, Bexley, NSW. 2207.

REGULAR CONTACTS WANTED

I am interested in setting up regular schedules with an Australian amateur. I only have 80 watts and no beam antenna, so a regular schedule would be my chance for something more than a brief DX-type QSO.

I am very interested in learning more about Australia and its people.

My QTH is Spokane, Washington and I am married and 30 years old.

Gary Stone K7YX, 1600 E. Spokane, Washington, 99207, USA.

EGO BOOSTING

I am continually surprised by some people, knocking their 'black box' into the ground, and putting themselves to the fore to boost their egos, unaware it has all been done before.

A prime example was the letter in July Amateur Radio headed "Emergency! Are we ready?" Yes, Sam, we are ready and have been for many years.

It seems that you are deliberately ignoring past history, both internally and internationally. We have always been able to handle emergencies as they have occurred. America certainly has never, as yet, played a vital part in any of our radio communications or emergency communications, so talking of America's vital role in Australia's emergencies is hogwash!

It seems that the expertise involved is of very low level. It clutters up two frequencies to pass traffic, when only one frequency should be used. Then the complaint about conditions, oh come on, all day every day? Sam really must have a poor receiver. Some stations, myself included, communicate with the USA and other overseas stations daily. But then, of course, we are not black box operators!

Regarding the Mexico City disaster, whilst appreciating the work involved in passing 600 messages via the telephone to the United States, I deplore the lack of expertise which necessitated such a "drop," whatever that is? I presume he meant Dallas.

Arthur Mead VK2JM.
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In 1944/45, the OSS required a radio that could operate securely inside Germany as opposed to those used by agents in the occupied countries which were not secure and which required trained CW operators. Wireless was used by these agents survived in reasonable numbers but Joan Eleanor would be very rare.

It was designed by Steve Simpson and De Witt Gander, who were officers with the OSS in London and in civilian-life were engineers with RCA. Simpson named the radio Joan Eleanor after two friends.

The only details I have are its size — 6.5 x 2.25 x 1.5 inches and weighing three-quarters of a pound. Power was by ‘long-life batteries and it had a vacuum tube with a microphone. The beam antenna ‘opened out to one foot’ whatever that meant.

It required an open space in which to operate, which in view of its very high operating frequency was ‘insane’ and is considered one of the ‘mroos operad’ to be prearranged scheds as to time and place with a Mosquito aircraft equipped with a larger, higher powered version of the Joan Eleanor and with a then novel device — a wire recorder on which contacts were recorded for transcription back to the UK.

Contacts were made via beams projected vertically from the ground and downwards from the plane flying at 35 000 feet. This beam covered a circle at ground level of 40 miles. Once contact was made the aircraft had to fly inside the beam.

Here is a recommended cure for lonely bachelors.

FOLLOW-UP PRACTICE

Further to the letter from P H Gibbs VK3AQ, in August 1986 edition of AR, I write to support his comments.

The OSS radio is open to all who comply with the licensing requirements — thus there will be amateurs who are technically competent and to whom home brew is a breeze, and there will be amateurs who are less technically knowledgeable who need to be encouraged and educated.

The latter group need all the support they can reasonably be given within our fraternity.

Technical skills which are developed by home-brewing are one of the cornerstones of our hobby and have the potential to act as a national resource in time of trouble.

I would encourage Divisions and the Federal Executive to pursue the matter of follow-up practical construction sessions further.

Yours sincerely,

Stephen Phillips VK3JY
37 Mangarra Road,
Canterbury. Vic. 3126.

DO YOU KNOW JOAN ELEANOR?

First AMTOR Station in Australia
Over 40 years on the Air,
44 Chartbury Road,
Aust. 2135.

DO YOU KNOW JOAN ELEANOR?

No11 don't live at Taronga Zoo nor yet at Catlan Point;
No13 don't live at Pine Grove, Halsey, Vic. 3280.
No12 don't live at No12 nor yet at No12.

DO YOU KNOW JOAN ELEANOR?

I'm a happy Signals Mech — ain't you 'eard o'
'lIvvy
It's a pity that amateur radio has descended to a level
where black box operators can write such inane
comments. Perhaps it Is merely ignorance. If so listen and learn.

Syd Molen VK2SG
First AMTOR Station in Australia,
Over 40 years on the Air,
13 Pendle Way,
Pendle Hill, NSW. 2145.

The above has been somewhat abbreviated and slightly censored. Syd's feelings have obviously been hurt! — Ed.

HOW TO KILL OR BUILD AN ORGANISATION

When conditions on the amateur bands are bad or there is a sunspot minima as we have at present, Institute activity generally seems to decline. It is at these times when one hears complaints, rumours and, sometimes even, demand for the withdrawal of hands into mischief. This state of affairs is common with all organisations, and at some stage or other when a general glasosis applies a glorious landscape appears before the members in their attitude towards their club or organisation. It is similar with the WIA and it is now that members should be wary — they should be bolder and more confident. The shortest way to kill it. The quickest way to “killing” any rehabilitation process is to adhere to the following ten rules (with apologies to the US magazine Popular Gardens):

1. Don't come to meetings, but if you do, come late.
2. Find fault with the officers and other members; particularly on the air.
3. Never accept office; it is easier to criticise than to do things.
4. Nevertheless, get annoyed if you aren't appointed to a committee.
5. If appointed, don't attend the committee meetings.
6. When asked to express your opinion, say nothing but afterwards tell everyone how things should have been done.
7. When others roll up their sleeves to help, say the Institute is run by a clique.
8. Never write a magazine article; it is too much trouble.
9. Hold back on your dues as long as possible, or don't pay at all.
10. Don't bother about getting new members, but if you do, be sure they are moaners like yourself.

Fortunately, we believe there are very few Organisation Killers amongst us, but in times of inactivity, beware. The Organisation Killer is an insidious disease and can become an epidemic. We would like to believe that every member of the Institute was the direct antithesis of the OK, and it does not really take any great effort to become so. Beware of that feeling of complicity that the OK cannot or will not suffer any of the problems you have to work. There is always some job in the Division you can do, and to quote the old proverb — Many hands make light work. Too often too much is left to do things.

So we suggest that you offer your assistance to your Divisional Council and you will find them only too pleased to give you a job to do. In any case, there isn't any job, just not in the race. Blip-happy!

Stephen Phillips VK3JY
37 Mangarra Road,
Canterbury. Vic. 3126.

ERRATA

"Practical Earth Resistance Measurements" by George Cranby VK3GI (July, p 10).

The author has asked us to make a clear a number of points which, partly due to initial ambiguity and partly to editorial changes, are not quite as intended.

1. He makes no claim to have measured ground conditions, which is illustrated by the electrostatic of a soil sample itself an independent of the electrode system. He has measured earth rod resistances in different kinds of soils.

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In 1940. In Australia he worked for the trip from Malta to Perth and he disembarked boarding a ship in Malta for the voyage to work.

len attained his amateur radio licence in 1981, and was a member of the WIA, AARTG and Communications Officer for the local State Emergency Service in York.

LEN VELLA VK5AVL

LEN was married with four children. I first met Len on July 12, 1954 whilst booking a ship in Malta for the voyage to Australia. He was the Welfare Officer for the trip from Malta to Perth and he disembarked at Fremantle. Over the years we lost track of one another until we made contact on the air in 1981. I was then fortunate to renew acquaintances with Len and his wife, Leonie, when I visited Western Australia during a Round-Australia trip in April 1985.

LEN'S wife and children, the Maltese Amateur Radio fraternity world-wide extend their deepest sympathy.

AMATEUR RADIO — What it's all about

AMATEUR radio is the use of radio communications in all its forms as a hobby. There is in excess of 16,000 licensed operators in Australia and about one million internationally.

What is the difference between amateur radio and CB?

There is a great difference between the two: CB radio gives reliable communication for a limited radius with many restrictions on the type of equipment used whereas a licenced amateur operator can operate with a wide range of equipment including television and radio-teletype with much more power levels on up to 20 different bands from broadcast stations to microwave transceivers.

How far will you get with amateur radio?

Different bands have different ranges at various times of the day. The operators consider how far and when they wish to communicate and select an appropriate band to transmit on. In this fashion fairly reliable contact can be made to anywhere in the world.

Must you have a big antenna to operate?

Not necessarily, antennas come in all shapes and sizes for any given band, though a good rule is the higher the frequency you operate the smaller your antenna becomes and the less range you have. For most overseas communication large rotatable antennas are used as they give the ultimate performance but simple single wire antennas are quite effective.

What else can you do with amateur radio other than talk?

Talking to other operators is only one aspect of the hobby, operators are permitted to experiment with and construct their own equipment in many fields. Some examples:

1. RADIO TELETYPE: Usually called RTTY, this mode allows communication by the typewriter keyboard using readily available ex-commercial teleprinters.

2. AMATEUR TELEVISION: The transmission of pictures in black and white television, both direct and via repeaters is an increasingly popular pastime.

3. SLOW SCAN TELEVISION: Allows one to transmit and receive pictures on black and white or colour from around the world.

How do you become an amateur operator?

To become an operator you must obtain a licence from the Department of Communications by passing a combination of radio theory, regulations and Morse Code examinations dependent upon which of three classes of licence you wish to obtain — either Novice, Limited or Full.

Examinations are conducted by the Department every three months. There are many courses run by the WIA, clubs and schools to assist with this. For details, contact the Department of Communications, the WIA, or your local radio club. Correspondence classes are also conducted by the WIA.

Once established, the amateur can play as active a part in the hobby as desired. There is no way of knowing where this exciting pastime may lead!

— Adapted from material supplied by the Gippsland Gate Radio and Electronics Club

W.I.A. WINDBREAKERS

— Warm and Machine Washable

— Navy Blue with 8 cm (3") WIA Badge

Sizes 12-24

Inquire now at your Divisional Bookshop.
**Fees Rise**

Radio communication licence fees increased from October 1, 1986 by an average of between seven and 10 percent, but in some instances, fees have been reduced.

The Department of Communications (DOC) in its Federal Budget Press Statements said the 16,300 licenses in the amateur radio service, under the single listing of "Amateur Station" increased $3 to $26.

CB licenses, which number 175,799 are now $13—an increase of $1.

Revenue derived from the use of the spectrum is estimated at $331.6 million—which compared with DOC's total 1986/87 budget of $36.9 million, an increase of $4.1 million or 12.5 percent.

The Minister for Communications, said a shortage of frequencies for land mobile services in Melbourne and Sydney meant that new applicants for use of mobile frequencies in these cities would have to pay a fee of $2,130 for exclusive channel use. This will encourage the sharing of channels and other spectrum efficient practices.

Full details of the new fee structure are available from DOC Offices in all State capitals and District Radio Inspector's Offices in 20 regional centres.

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**Solar Geophysical Summary**

**June**

**Solar**

The solar activity was very low with no energetic flares observed. The visible disc of the sun was virtually without spots for the entire month, only small spots appearing for brief periods on the first and eighth. The low level of solar activity was reflected in the low value of the 10 cm flux, which reached a peak value of 70 on the 14th. The monthly average of the 10 cm flux was the lowest since the last solar minimum.

The 10 cm flux readings were:


The average was 67.5.

The sunspot average was 0.8 and the running yearly average centred on December 85 was 15.4.

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**Geomagnetic**

The month was generally quiet except for the period 27-28 when a minor storm occurred. This was caused either by a recurrence or was the result of a filament eruption on 22nd. A = 27,21.

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**Deadline**

All copy for inclusion in the December 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th October 1986.
HAMADS are a FREE service to MEMBERS of the WIA

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of your preferred paper, and clearly list Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use abbreviations.

* Remember your STD code with telephone numbers.

* Except line numbers free to all WIA members. 99.00 per 10 words minimum for non-members

* Copy in typescript, or block letters — double-spaced to the margin.

* Repeats may be charged at full rates

* Please remember your STD code with telephone numbers.

* Copy is required by the Deadline as indicated below the conditions.

TRADE ADS

AMICON FERROMAGNETIC COILS: Large range for all uses. Write for free catalogue. For data and price list send 10x5x200mm SASE to: RJ & US IMPORTS, Box 157, Morristle, NSW 2223. (No inquiries at office ... 11 METER BASESTATION: 60W output, 300kHz to 150MHz, 0.1Hz bandwidth. 50W antenna. Complete with manuals in original supply. Hand mic & desk scan mic. All in perfect condition. Manuals. $1090 ONO. VK2BOO, QTHR. (02) 713 1831 AH or (02) 568 2085 BH.

ICOM IC-740: FM module fitted. WARC bands & PS-15 original supply. Hand mic and manuals. All in perfect condition. Manuals. $1090 ONO. VK2BOO, QTHR. (02) 713 1831 AH or (02) 568 2085 BH.

ICOM IC-717A RX WITH FM: Dressier active ant. Emtron ATU, microprocessor modules, 2 & 6m converters. $1100. (049) 69 4281.


PEARCE SIMPSON AM; SSB; CB: with power mic plus handbook to model 10 band. $35. Midland home-base port & mobile 23 cb V. Very compact (AM5) $65. AM/FM broadcast band rx. AWA model TS.90. $80. Thundertooth switch. C&K type. 3 wheels, 9 positions. $30. 50W 5ØW power meter $70. Arie power supply. 13V. $85. Ext RF amp with 20 dB gain suitable for novice. $40. VKCCJV, QTHR. (02) 809 5624.

QUAD: 2-bands, 10 & 15m, 2 el. Wooden cross arms, wire elements. $20. No mods, in good condition. $100. VK2LQZ, QTHR. (03) 662 8734.

SATELLITE ANTENNA SYSTEM: 2m, 2 x 8 el. Incl phasing harness, left or right-hand circ polarisation. 70cm, 2 x 14 el. Incl phasing harness, left or right-hand circ polarisation. Fibreglass stacking boom. $450. VK2BKG, QTHR. (02) 846 8761.


ELECTRONICS TODAY INTERNATIONAL . 26 & 33

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EMTRONICS 39

AEONICS 43

DICK SMITH ELECTRONICS 43

HOKS ELECTRONICS BROKE 75 5024

EDUCATION TODAY INTERNATIONAL . 26 & 33

THE ADVISOR'S INDEX
We believe one of the fundamental roles of an electronics magazine is to provide **brain fodder** for enthusiasts and engineers, hobbyists and hardware hackers, amateurs and audiophiles.

Practical projects and articles that stimulate the mental 'taste buds' and satisfy the cranial cravings, are ever in demand.

Our reader survey showed that you purchase a wide range of magazines each month, seeking ever more brain fodder. By far the most popular and widely respected of the international journals was **Elektor Electronics**.

Hence, to bring you more brain fodder, we obtained the rights to publish a substantial part, of local relevance, from the monthly issues of the UK edition of Elektor Electronics.

From the October issue, we'll be adding to the magazine a special **ELEKTOR ELECTRONICS SECTION** featuring:

- More projects! From one of the world's most widely read and respected electronics magazines.
- More features! To explain the new technologies and developments as they arrive.
- More articles! Covering the technologies and application techniques of devices and circuits.

**HERE'S A PREVIEW OF OCTOBER'S ELEKTOR SECTION**

**INDUCTORS IN PRACTICE**

In spite of their apparent simplicity, inductors have always been something of a problem. Many designers cannot obtain readymade inductors that they have designed or wound by the constructor. This whole area of modifying some of the equations surrounding this subject and showing how making an inductor is not such a daunting task is some more.

**LOUDSPEAKER IMPEDANCE METER**

A simple yet interesting and useful instrument for measuring the impedance and the inductive reactance of a loudspeaker.

**UNIVERSAL PERIPHERAL EQUIPMENT:**

**SERIAL DIGITIZER**

Have you ever wishedbaneen TO read analog output of your computer while being in control of the analog output signals connected to your computer? The design of an eight-channel analog-to-digital converter board goes beyond the computer problems by allowing the computer to operate a universal interface. Its straightforward incorporation, limited only by the type of computer system.

*Australian Electronics Monthly is edited by Roger Hanson VK3ZTB and published by Kedhom Holdings, Fox Valley Centre, Chir Fox Valley Rd & Koolee St, Wahroonga 2076, NSW.*

October Australian Electronics Monthly

with **Elektor Electronics** incorporated!
More BRAIN FODDER — with
incorporated in
Australian Electronics Monthly
— coming October!

LOUDSPEAKER
IMPEDANCE
METER

SERIAL
DIGITIZER

UNIVERSAL PERIPHERAL
EQUIPMENT:

STORAGE
OSCILLOSCOPES

A simple yet interesting and useful instrument for measuring the resistance and the inductive reactance of a loudspeaker.

Have you ever wished it was possible to read analogue voltages on your computer while signing in detail at the instructions of bus connecting the design of your choice?

The design of an eight channel analogue digital converter board goes round the hardware problems by utilizing the computer's 16-bit A/D port, and so becomes a universal unit for straightforward incorporation of almost any type of computer system.

Conventional (real-time) oscilloscopes cannot capture waveforms such as, for instance, the changing circuit of a brief or the waveform of an AT waveform. Now you can even with attached events such as disk drives. They also do not allow you to be measured of events that happen at different times. All these drawbacks are absent from storage oscilloscopes.

- More projects! From one of the world's most widely read and respected electronics magazines.

- More articles! Covering the technologies and application techniques of devices and circuits.

Make sure you reserve yours from your newsagent or favourite electronics store.

Better still — subscribe!

SUBSCRIPTION FORM

Subscribe, and you could win this superb Weller WTCPN Soldering Station courtesy of Cooper Tools. Each month, we'll award this prize — worth over $140! — to the new subscriber who best answers the questions here.

Q1: Weller irons employ "..." point temperature control.

Q2: On a separate sheet of paper, in 30 words or less, what was it that prompted you to subscribe to AEM this month?

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Cover photograph features the Florence McKenzie Memorial Trophy, together with Jill VK4ASK ex-VK4WNK, (left) and Wendy VK4BSQ.

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DEADLINE
All copy for inclusion in the January 1987 issue of Amateur Radio, including regular columns, must be received at PO Box 300, Catfied South, Vic. 3162, at the latest, by 9am, 10th November 1986.

Catering for the RTTY enthusiast there is a fine project from another avid home brewer, who has a shack which is a sight to behold. It contains 90 percent of all the ‘goodies’ that have been designed and built by Peter VK3AZL, a member of the Publications Committee.

Bob VK7KZ, with members of his family journeyed to the United Kingdom and caught up with Jack Sykes (refer page 40), it is an interesting story and with AR at heart, Bob wrote about his visit to see Jack and came away with an unusual but true story that Jack would like to share with the readers of this magazine.

For those contemplating travelling overseas, a list of countries that have reciprocal licensing arrangements with Australia’s administration should be of interest. One may find it on page 22.

Other items of interest in this months issue, apart from the regular columns, include an equipment review on the FRG-8800 receiver, Knowledge of Hand Equipment, the new edition of Ham Addicts, (further queries are still required), an article on the WW1 T28 transmitter and Jim VK3PC, has a Club Portrait on another club. Jim, is looking for other clubs to portray and may be contacted at OTHR.
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Editor's Comment

A FUTURE FOR HOME-BREW?

There has been for many years an attitude towards building one's own amateur equipment that "it just isn't worth the trouble any more". We have heard such arguments for a long time now as:

"You can't get the right parts any more",
"Why build gear, perhaps taking years to finish it, when you can earn enough to buy commercial stuff in a few weeks?"
"You can't build anything that looks half as good (or works half as well) as the commercial rig"
"The commercial equipment is so compact and/or versatile. How can you build anything so small or complex?"

Many of these arguments seemed unbeatable until quite recently, but I would like to suggest that the climate is now changing. Let us not forget that the Amateur Service is unique in that its individual operators are legally entitled to build their own radio equipment. All other services either depend on type-approved commercial products or employ their own engineers in their own dedicated workshops. Most of us are not electronics engineers, but unlike operators in the other services we have earned the right to home-brew by passing technical examinations which demonstrate at least the beginnings of competence to build equipment to meet our requirements. Like all rights, this could be lost if we cease to demonstrate the need for it. It has been proposed in Canada, for example, that only the highest grade of amateur licence should carry the right to build one's own. The well-known saying "Use it or lose it" applies here too.

How has the climate changed? One of the biggest factors is the major shift in exchange rates between Australia and the rest of the world over the last year or two. This has made imports much dearer, but the other side of the coin is that our exporters are now much more competitive. Not only does this mean that it's now more attractive to build here rather than buy from overseas, but Australian manufacturers are beginning to tackle the overseas markets in which hitherto we were over-priced. The August issue of "Electronics News" has a front-page story about the expansion of local industry. Development of new products has doubled in four years. "In-house" rather than imported technology is coming up fast. It may not be long before we once again have a significant components industry. All of these factors are bound to "rub-off" into the amateur field, particularly since many of our "professional amateurs" are involved in this industrial expansion.

There was a recent proposal (by VK3XU, one of our more prolific home-brewers) that we should have an Australian "Amateur Handbook", in which design and construction using locally available components should feature largely. We have had a number of letters indicating willingness to buy such a publication. Hopefully, before long, we may be able to assemble a team of technical authors to write it. Any offers? We may never reach the exacted standards of the ARRL or RSGB Handbooks, but it would be worth a try. Can we do it? Will there be a resurgence of amateur home-brewing? Maybe, right now, it's all starting to happen!

Bill Rice VK3ABP

Editor

WIA News

GENERAL MANAGER

Critical to the effective operation of the Federal organisation of the Wireless Institute of Australia is its full time manager. The Executive has recently reviewed that position, in the light of the changing requirements of the Institute. It concluded that as well as a need for the management of the business affairs of the Institute, there was a technical aspect of the activities of the Federal Executive that also had to be met. An increasing number of matters involving the Department of Communications and requests from members require at least a technical background.

Accordingly, the Executive has decided to identify its full time manager as the General Manager of the Wireless Institute of Australia. The Radio Society of Great Britain gives the same title to its senior employee, a title that is consistent with the quality of the service.

Earl Russell VK3BER, has been appointed the first General Manager of the Institute, as well as its Secretary. Earl has been an amateur for 16 years, and has recently retired from a Governmental Department where he worked in the communications area for 33 years. He is eminently qualified for the position, having been active as Business Manager for the last seven months, during the absence of Reg Macey.

The Federal Executive has recorded its gratitude to Reg Macey for his contribution to the Institute as Business Manager since August 1982, and wishes him a speedy recovery.

David Wardlaw VK3ADW

Federal President

Matching Impedance Formula

The emphasis on matching of impedances, (transmitter to line, line to antenna), in modern times, has come mainly because of the need to protect expensive output transistors by achieving low SWR.

A fundamental principle, that maximum power in a load coincides with source and load impedance equality, has tended to become obscured.

Since the principle is not immediately obvious, recourse to mathematical analysis is required for its proof.

In the following:

V = a voltage source,
Rₗ = the source resistance,
Rₑ = the load resistance.

\[ \frac{R_e}{R_s + R_e} \]

The power in Rₑ is given by the usual \( \frac{V^2}{R} \), which in this case becomes

\[ \frac{R_e}{(R_s + R_e)^2} \]

To obtain a maximum for this expression, we differentiate it with respect to \( R_e \) and equate the resulting expression to zero.

\[ \frac{d}{dR_e} \left( \frac{R_e^2 + 2R_e R_s + R_s^2}{R_e^2} \right) = \frac{2R_e + 2R_s}{R_e^2} \]

To equate this to zero, it is sufficient to equate the numerator to zero.

This gives:

\[ R_e^2 + 2R_e R_s + R_s^2 = 2R_e + 2R_s \]

From which \( R_e^2 - R_s^2 = 0 \)

From which \( R_e - R_s = 0 \)

From which \( R_e = R_s \)

The maximum power in \( R_e \) therefore occurs when \( R_e \) and \( R_s \) are equal.

The voltage across \( R_s \) is given by the voltage divider principle as

\[ VR_e \]

\[ R_s + R_e \]

where \( V \) is the supply voltage.

\[ \frac{VR_e}{R_s + R_e} \]

The voltage across \( R_e \) is constant, and we may take \( V \) as unity. So the voltage across \( R_e \) may be written as
Mr E Russell  
Federal Secretary  
Wireless Institute of Australia  
PO Box 100  
CAULFIELD SOUTH VIC 3162

Dear Mr Russell

I refer to discussions at the Departmental/Institute federal executive meeting held on 19 August 1986, concerning packet radio, repeater cross-linking and other matters.

At the outset, I would like to congratulate the Institute on its packet radio and repeater cross-linking submissions. The papers greatly assisted the Department in its consideration of these two new amateur operating concepts for amateurs in Australia.

I am pleased to advise that, from the date of this letter, both "packet radio" and "repeater cross-linking" are permitted in the Amateur Service. Operation is, however, subject to the conditions detailed in Attachments (A) and (B). These conditions will be included in the revised amateur handbook which, as you are aware, is to now be produced as three separate volumes.

Additionally, noting the similarity between packet radio and RTTY, I would advise that use of unattended operation and store/fwd techniques employing RTTY is authorised. Stations utilising these modes of operation must, however, conform to the conditions outlined for packet radio in Attachment A.

Recognising that version "V2" of the Vancouver packet protocol can not meet the identification requirements stipulated until an updated version is released, the Department is prepared to authorise use of "V2" until 31 March 1987. It is anticipated that version "V3" will be available by this time and it is understood that "V3" will fully comply with the identification requirements.

The Department will authorise the cross-linking of up to three repeater stations. Cross-linking of any number of repeaters for the purpose of WiCFN or approved WIA broadcasts will, however, be considered. Each link transmitter must be separately licenced and the fee of $26 per transmitter will apply. Applications to cross-link repeater stations should be forwarded to the relevant State Manager together with comment from the local WIA Division and the repeater licensee.

In relation to the topic of 29 MHz FM repeaters, I am pleased to confirm that the Department will permit this form of operation. The use of 16KOPN by amateur and amateur repeater stations operating in this band is also authorised. The Department would now be pleased to consider WIA band plan arrangements for repeater operation in the 29 MHz amateur band.

Your assistance in promulgating the information outlined to the amateur fraternity through the normal channels available to the Institute, would be appreciated. Should you require any additional information in relation to these matters, you should contact Mr T Huxley (telephone 062 644991) who would be pleased to assist you further.

Yours sincerely

[Signature]

P W Hunt  
Manager Regulatory Operations Branch  
Radio Frequency Division  
CANBERRA

30/9/86
**Attachment A**

**PACKET RADIO**

**GENERAL CONDITIONS**

1. Novice Amateur Stations shall not use the packet radio transmission mode of operation.
2. Amateur stations utilizing "packet radio" must conform to the general technical parameters and conditions applying to the Amateur Service.
3. Each "packet" shall contain the originating station's identification, that of the destination station and the station transmitting (if different from the originating station).
4. Amateur stations employing "packet" in an unattended operating configuration shall be fitted with:
   1. A timer to cause automatic shut-down of the station transmitter after 10 minutes of uninterrupted transmission.
   2. A fail-safe facility to prevent the station transmitter operating due to equipment malfunction.
5. An amateur station shall not retransmit a "packet" signal in any amateur band that the originating station is not authorised to use.
6. Amateur stations when utilizing the packet radio transmission mode shall not be connected to the switched telephone network.

**IMPORTANT NOTES**

1. Any protocol may be used for "packet" transmission provided it meets the identification requirements stipulated in (3) above.
2. The use of store/factory packet techniques by stations in the Amateur Service is permitted.
3. Amateur licensees employing the packet radio mode of transmission are reminded that they are responsible for ensuring that third party traffic conditions are met.
4. Providing the conditions stipulated in (4) above are met, amateur stations may operate in an unattended configuration when utilizing the packet radio transmission mode.
5. Packet repeater stations must comply with the conditions applicable to repeater stations and those conditions outlined above.

**Attachment B**

**REPEATER CROSS-LINKING**

**GENERAL CONDITIONS**

1. Repeater "cross-linking" arrangements must conform to the general technical parameters and conditions applying to the Amateur Service.
2. The repeater "link" shall not be used to permit an amateur station to be retransmitted in a band it is not authorised to use.
3. Each "link" transmitter shall be fitted with:
   1. A fail-safe device to prevent operation due to any malfunction.
   2. A timer to cause automatic shut-down after 10 minutes of uninterrupted transmission.
   3. A facility to, when activated, transmit an identification call sign at least once every 10 minutes.
4. Repeater stations shall not retransmit the call sign of the "linked" station or that of the "link".
5. The link transmitters shall only be activated, for other than identification purposes, when a received signal is present on any of the "linked" repeater stations.

**IMPORTANT NOTES**

1. Cross-linking of up to three repeaters will be authorised.
2. The conditions outlined in 1 - 5 above also apply to single repeater stations, with uni-directional transmitting and receiving sites, which utilise links.
3. Only frequencies above 50 MHz will be authorised for the cross-links.
4. Applications to cross-link repeater stations should be forwarded to the State Manager for approval.
5. Each link transmitter may utilise the call sign of the station at which it is situated for the purposes of identification.
A MULTIBAND END-FED INVERTED-VEE AERIAL SYSTEM

The following article was originally printed in Radio ZS, January 1973, but was reprinted in August 1977 in response to popular requests by readers. It has been contributed to AR by James Crichton VK2XFC.

It is not without good reason that end-fed aerials requiring tuners have fallen from favour to be replaced by systems using untuned transmission lines. Our transmitters and linear amplifiers have enough knobs without adding an extra three or four to twiddle.

Yet, by a judicious choice of wire length we can produce a situation where the simplest of preset tuners can be used with them resulting in a compact, cheap, easily constructed multiband aerial system with certain advantages over the commonly used multiband aerials.

Suspecting that, lying in obscurity amongst the many pieces at the bottom of the hat there were two which in partnership would emerge as a team deserving of a share of limelight, I delved until out came the pair presented in this article.

CHOOSING THE TUNER

A tuner is a coupling network between the low impedance output of the transmitter (Zot) and the impedance of the input to the antenna (Zia).

If Zia is complex, containing widely different amounts of reactance and resistance on each band, a complex tuner is required to cope with it. The less complex Zia, the simpler the tuner. In fact, if we can arrange to keep Zia always in a simple form, the simpler the tuner.

Taking f = 28.5 MHz then length = 149.95 (4 - 0.025) / 28.5 = 20.91 metres. Although the wire will be a few percent too long at the lower frequencies, the reactance introduced is small enough to be cancelled by the tuner without serious detuning effects.

Having made a prudent choice of tuner and wire length, let us proceed to a practical design of this happy partnership.

DESIGNING THE L-NETWORK

The behaviour of an end-fed harmonic aerial is best understood in terms of transmission line theory. Any single wire parallel to ground forms a transmission line against ground with a characteristic impedance Zo = 138 log 2h/r where h = height of the wire above ground and r = radius of the conductor in the same units. Typically, for a wire radius of 0.8 mm and an antenna height of 7.82 metres, Zo = 607 ohms.

Such a transmission line, although physically open circuit at the far end, is in effect terminated by the equivalent of a resistance related to the power lost from the wire by radiation. As with all transmission lines, this fictitious resistance reduces as the line is lengthened in terms of wavelength and approaches infinity. For any line, this resistance is repeated at the input end and is in fact our previously mentioned Ria. Measured with a bridge, the input resistance that can be expected is shown in Table 1.

### TABLE 1.

<table>
<thead>
<tr>
<th>LENGTH OF WIRE WAVELENGTHS</th>
<th>RIA OHMS</th>
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<tbody>
<tr>
<td>0.25</td>
<td>60</td>
</tr>
<tr>
<td>0.5</td>
<td>2 800</td>
</tr>
<tr>
<td>1</td>
<td>1 700</td>
</tr>
<tr>
<td>1.5</td>
<td>1 200</td>
</tr>
<tr>
<td>2</td>
<td>900</td>
</tr>
<tr>
<td>3</td>
<td>750</td>
</tr>
<tr>
<td>4</td>
<td>700</td>
</tr>
</tbody>
</table>

Figure 1a depicts the basic circuit of the L-network when matched between the output load impedance of the transmitter (Zot) and the input impedance of the aerial wire (Ria). When Ria is much lower than Zo, the equations for the circuit simplify to:

\[
2 L = \sqrt{Ria \times Zo}
\]

and

\[
\frac{1}{2} f = \sqrt{Ria \times Zo}
\]

with which we find that inductance and capacitance to use in our tuner on each band. Select the value for Zot arbitrarily as 52 ohms and find the value of Ria from Table 1. A typical set of results is shown in Table 2. It should be borne in mind that these results may be modified in practice by:

- stray capacitances and inductances in the tuner
- reactance at the aerial input

After constructing the L-network, the actual value of Zot may not be 52 ohms as planned but somewhere between 35 and 75 ohms. This is of no consequence as the loading control of the transmitter is quite capable of matching any pure resistance over such a range.

CONSTRUCTING THE L-NETWORK

Figure 2 depicts the input characteristics of an end-fed aerial showing how the reactance and the voltage change as the length is varied from 0 to 1 wavelength. The figure applies equally well if the wire length remains constant and the input frequency is varied, and can be extended indefinitely to the wavelengths exceeding one wavelength.

### a) Random Lengths

If the length of the aerial falls between the points O, A, B, C, D the input impedance Zia contains reactance as well as resistance either of which may be high or low depending on the length and the frequency. Clearly, Zia may be low on one band and high on another. Furthermore, the reactance may be capacitive (negative) on one band and inductive (positive) on another, resulting in severe detuning of the element's natural resonance in order to provide the required reactance of the opposite sign. Apart from the fact that at least three variable elements are required in the tuner; eg a pi-network, the range of minimum to maximum inductance and capacitance must be large and tuning difficulties are likely at the lowest and highest frequencies. So much for random lengths!

### b) Resonant Lengths

OA, OB, OC, OD are all resonant lengths inasmuch as the reactance is zero and Zia becomes a pure resistance which we shall call Ria. For OA and OC, Ria is very low and these lengths lend themselves only to odd-harmonic operation. On the other hand, lengths OB and OD, which are multiples of a half wavelength, are suitable for all harmonics and Ria is a high resistance on all bands. Just what we need for our L-network.

From this, we could choose a half wavelength on 80 metres which would be two half-waves on 40, four on 20, six on 15 and eight on 10. But, by making our length a quarter-wave on 60 we can make our aerial half as long and since Ria will be in the same order as Zot on 80 metres, we can arrange the switching in our L-network so that the aerial bypasses the network direct to the transmitter on that band.

The length formula for an end-fed aerial is:

\[
\text{Length} = \frac{149.95 (n - 0.025)}{f \text{ (MHz)}} \text{ metres}
\]

where n = number of half wavelengths.

The length we require is one which will accommodate four half-waves on 10 metres. Taking f = 28.5 MHz then length = 149.95 (4 - 0.025)/28.5 = 20.91 metres. Although the wire
layout of a practical L-network for the 20.91 metre aerial. The values given for L in Table 2 have been translated into turns. Figure 4 is the circuit diagram. The RF choke is included to prevent static charges building up on the antenna wire during storms. Its reactance at the lowest frequency is about 20 times higher than the Low-Z input so it introduces no measurable loss. The switch is arranged to short out all but the required number of turns on 10, 15 and 20 metres. No connection is made to the 40 metre switch contact so that, on this band, the full coil is operative. In the 80 metre position the whole coil is shorted out to provide the direct connection as described previously.

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>RIA OHMS</th>
<th>XL or Xo OHMS</th>
<th>L pH</th>
<th>C PF</th>
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<tr>
<td>3.7</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>7.075</td>
<td>200</td>
<td>300</td>
<td>87</td>
<td>60</td>
</tr>
<tr>
<td>14.2</td>
<td>1000</td>
<td>200</td>
<td>287</td>
<td>38</td>
</tr>
<tr>
<td>21.3</td>
<td>1000</td>
<td>200</td>
<td>250</td>
<td>31</td>
</tr>
<tr>
<td>28.6</td>
<td>1000</td>
<td>200</td>
<td>216</td>
<td>26</td>
</tr>
</tbody>
</table>

**Putting up the aerial**
The size of wire is not critical, about 1.2 mm diameter being typical. As a portion of the wire will be in the shack it is advisable to use an insulated variety. The conductor may be solid or stranded.

Take a length of wire in excess of 21 metres, and attach an aerial insulator. Anchor to some suitable point and stretch the wire a little. Accurately measure off 21.06 metres and cut.

![Figure 3.](image)

**Figure 3.**

A typical installation is shown in Figure 5. Although the aerial will load and perform well in almost any configuration, I have taken the advantage of the true inverted-Vee configuration (as distinct from the dropping dipole). Reference to long wire aerials in the usual literature will show that on 10 metres this configuration is known as a half-Rhombic." can provide low-angle, vertically polarised, end-fire radiation with a gain of some 6 dB over a ground plane antenna. The aerial tends to become more omnidirectional as the frequency is lowered but radiation on all bands tends to be greater in the direction of the free end of the wire. Even on 80 metres this diminutive aerial performs as well as a 40.23 metre length dipole at the same virtual height, provided you have an effective ground system, but of course, there is nothing to stop you from making a double size Z8SU special using the information given to modify the inductor capacitor and switching accordingly. A pole is often unnecessary if you can find something higher than your antenna, such as a chimney, to hold up the apex with nylon cord. This type of support may result in a sloping plane for the Vee, which is no disadvantage.

**Beamng to DX**

As an alternative to the inverted Vee, — if you are keen to beam your signal on 20 and 15 as well as 10 use an upward sloping configuration at an angle of about 30 degrees to the horizontal towards the desired direction. Or if you live in an apartment several storeys above ground, you can use a downward slope. For field days and temporary installations take your “box” and 21 metres of wire with you.

**Calibrating the L-network**

There is only one way to positively calibrate your L-network so that it presents a pure resistance to your transmitter, and that is by means of an SWR bridge of the appropriate impedance inserted in the short piece of coax. Swings to the 40 metre band and roughly set the capacitor by peaking up on reception. Switch the SWR bridge to the reflected power position, provide a small carrier and rotate the L-network capacitor to give a minimum reflected reading. Leave it there while you load up your transmitter to full power. Now check for the minimum again and mark the scale. Repeat the procedure for 20, 15 and 10 metres. Finally, set the capacitor to minimum and switch the network to 80 metres. If it will not fully load the transmitter you have an ineffective earth system on 80 and it is time you did something about it anyway!

**Band-changing**

You are all set. To change bands simply switch to the band required and set the capacitor to the mark, remembering that the mark for 80 is at minimum capacitance. Once set, the tuner will provide the correct load for your transmitter tune-up and it should not be fiddled with. The SWR you measured might have been anything from 1:1 (meaning your pure resistance was the same as the bridge) to 2:1 (meaning it was either half or double the bridge resistance). No matter what the reading, ignore it if your rig loaded up nicely. However, if you have one of those rigs without a loading control, designed optimistically to work only into a 52 ohm resistive load, you might have to move the taps until you have a 1:1 ratio on a 52 ohm bridge on all bands. If you borrowed the bridge you can now return it to its owner.

**Conclusion**

At the start, I hinted that this system has certain advantages, several of which have so far emerged in the text, such as a purely resistive load and no transmission line matching problems and losses. Obviously the aerial is cheap, is smaller than other aerials that include 80 metres and is an effective harmonic suppressor. Less obvious are the advantages in reception where not only does the system provide additional front end selectivity, but sensitivity as well. The latter derives from the fact that the effective capture area of the antenna remains fairly constant over its range whereas that of a trap dipole or vertical reduces in proportion to the square of the wavelength. This accounts for the lively receiver performance, particularly at higher frequencies. RF in the shack? As reactivity is absent, a field strength meter will show no greater stray RF than with conventional antennas. This goes for BCI too.

It can take no credit for the well worn principles expounded here. But I hope that pulling my selected pair out of the hat will provide a popular alternative multiband for the greater enjoyment of our hobby.

**Next month we will present a follow up article.**

The following article will provide a summary of this month’s article and will also expand some of the details.
By definition and modern day vernacular, it should be called a synthesiser however, in the writer's opinion, this term is another of those horrible Americanisms which are creeping into our language, and therefore should be avoided where possible! There is certainly nothing synthetic about its performance.

This unit was originally developed having a basic frequency resolution of 1 kHz. With this configuration, the top reliable operating frequency was in the region of 3 MHz; i.e. 2.999 MHz.

Above here, "Lock" time increased and a small glitch of one digit appeared if and when the last two switches were set on 00. Notwithstanding, the prototype managed to stagger up to 3,800 MHz. The absolute limit being determined by the characteristic spread of the semiconductors and stray circuit capacitance.

The next version, MK II had its resolution improved by a factor of 10, enabling the output to be settable to 100 hertz resolution. This modification needed only two extra divider chips (4017) and a rotary switch, together with a little wiring around the switch, summing gate and VCO.

The reference frequency now being 50 hertz also necessitated an increase in the loop filter time constants.

Now Murphy dictates that "nothing can be gained for free" (not even lunches!) and that every improvement tends to introduce some adverse reaction, however slight. The main one in this case was an increase in "Lock" time. This was acceptable up to 1.9999 MHz and usable to 2.5000 MHz where our old friend, the glitch, was still evident. It is surmised that this spurious is due to timing problems in the 74C30.

At this stage, the problem has been ignored and the frequency limits re-specified as 2.999 MHz (MK I) and 2.5000 MHz for the later version. Maybe, at a later date, a second 74C30 will be tried, or the board re-wired to take a 4068 hex NAND gate, which is more readily available.

**CHIP TYPE 4046**

The brain of this instrument is a CMOS IC, type 4046, which contains a zener diode, RC type VCO, two phase detectors and a source follower. However, only the VCO and one comparator are used in this design.

**PLL EXPLANATION**

Before proceeding with the circuit description, a brief outline of this PLL system will be given.

Two divided down signals are presented to pins 3 and 14 of the 4046. One is derived from the reference source, and the other from the VCO output via the programmable divider.

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These frequencies, if different, will produce a DC error signal from the comparator, which, in
turn, is fed to the VCO causing its frequency to be shifted until it locks with that of the reference.

Perhaps a practical example will make the foregoing a little clearer. Let the desired output be 1.5 MHz, therefore set the program switches to 15000. The following now takes place — Output from pin 4 of the VCO is divided by 15000 in the 4017s numbered IC8 through to IC12. The resultant is then fed, via the summing gate (IC15) 74C30, to one half of the dual "flip flop" 4013 (IC13), where a further division (2) takes place, and thence to pin 3 of the comparator. The other input (pin 14) is derived from the 10 MHz source and is supplied at 50 hertz.

The almost instantaneous reaction is for the comparator to produce an error signal which, being applied to the VCO, shifts its frequency until the signals on pins 3 and 14 are identical in frequency and phase. Therefore, the signal at pin 4 must be 30 000 times 50 Hz, or in other words, 1.5 MHz.

Similarly, changing the program to 01000 gives a total division of 2000 resulting in a locked frequency of 100 000 kHz.

As the VCO is locked to the divided-down reference, the stability and accuracy of the two must be similar. However, a little phase noise is normally present at the VCO output, although dependent upon the basic VCO stability and the time constant of the "Low Pass" filter in the signal path, and is of little consequence in this application.

GENERAL CIRCUIT DESCRIPTION

It will be easier to follow this description if reference is made to the block diagram, Figure 1.

Whilst the 4046 was said to be the brain of this circuit, the heart must certainly be the reference oscillator, for this controls the overall stability, etc. There are several ways to go in this direction, some of the alternatives being dealt with below. The final choice is governed by one's personal preference, the intended use and/or cost.

Let's look at some of them.

1. THE ULTIMATE

The constructor may choose the "Ovened Reference", which was described in an earlier paper. It could be built in and a buffered output provided so that the highly stable 10 MHz source would be available for external use.

This design is technically superior, but it's cost may not be justified.

2. EXCELLENT

The choice here is to build the generator minus oscillator and feed it externally from a "free-standing" ovened reference oscillator. The results will be as per Reference 1. Cost will be greater due to the duplication of power supplies, cabinets etc. Convenience would suffer a little, due to the extra connecting cables etc.

3. VERY GOOD

Forget the temperature control bit altogether and build a straight Colpitts oscillator using two transistors, Darlington configured. This design is cognisant of cost, whilst maintaining performance. It is considered that this procedure would be more than adequate for most amateurs.

4. SATISFACTORY

A gate-type crystal oscillator would perform adequately here and be quite economical as well. Suitable crystals are regularly advertised in the local magazines. Lower frequency crystals (4.000 MHz) are available and could prove very useful. One of these would enable the use of a CMOS device instead of a TTL and eliminate the level converter TR1.

Figure 2 — 10 MHz/100 Hz Clock; Board 3.
Note 1 — IC5: all unused inputs go to 0V.
Note 2 — * Indicates circuit test pin.

Figure 3 — 10 MHz/100 Hz Clock; Board 4.
Note — IC12, 14 IC1's. 10 2, 2 switches are wired as
Well readers, the choice is yours, you pay your money and get only what you pay for. Fortunately, the constructional method employed will permit a change from one to another alternative quite readily.

The author elected to use choice number one, mainly because of having already gone through the exercise of developing an "ovened oscillator" (See previous article). Hence, the remaining description is biased in this direction.

**CLOCK DIVIDER**
The buffered output from the reference goes, via IC5 (part 7404), to the five stage decade divider (IC1 74LS90, IC2 4518 and IC3 4518) through the internal/external switch. (See Figure 2). Thus the 10 MHz reference has become 100 Hz at 5V CMOS levels.

**PROGRAMMABLE DIVIDER**
Attention must now be directed to the programmable divider (see Figure 3).

This is driven from pin 4 of the 4046 (IC14). It consists of five pre-settable counters type 4017 (IC8 through to IC12) all cascaded together and controlled by five non-shorting rotary switches wired to the appropriate divider pin connectors.

**SUMMING GATE**
The wipers of these switches are then directed to five inputs of a Hex NAND gate (IC15 74C30). It consists of five pre-settable counters type 4017 (IC8 through to IC12) all cascaded together and controlled by five non-shorting rotary switches wired to the appropriate divider pin connectors.

**DIVIDE BY TWO**
The 4013 is used to convert the asymmetrical output of the programmable divider into a square wave signal with a mark space ratio of 1:1, being divided by two at the same time. When locked, the frequency at pin 1 (IC13) will be 50 Hz (see Figure 4).

Naturally, the reference signal must also be 50 Hz, and this is taken care of by the other half of the 4013 flip flop. TR1 converts the TTL level so that the IC13 may be toggled.

We now have two 50 Hz signals processed and ready for the phase comparator. This section was discussed adequately in the early part of this dissertation, hence the point will not be laboured further, except to mention the lock indicator. Pin 1 of IC14 goes high in acquisition of lock, which turns TR2 hard on. The appropriate LEDs in the FND 500 display (IC7) are driven from the emitter via three current sharing resistors. The current is set at 10 mA per segment.

**OUTPUT OPTIONS**
A decision should now be made regarding the output options to be incorporated into the unit. (Refer Figure 1). There are many available, of which the constructor may choose any combination of those listed below:

1. Basic Range; ie frequency range from 2.5000 MHz down to 100 Hz. This is available from circuit "Test Pin" number *1.
2. 259.99 kHz down to 10 Hz at pin *2.
3. 25.999 kHz down to 1 Hz at pin *3.
4. 2.5999 kHz down to 0.1 Hz at pin *4.
5. 259.99 Hz down to 0.01 Hz at pin *5.
6. Option 1 through to 5 available at pin *10.
7. CMOS level only at pin *6.
8. TTL level only at pin *7.
9. CMOS/TTL switchable at pin *8.
11. AC coupled at pin *9.
12. AC/DC coupled at pin *11.

Options 2, 3, 4, 5, and 6 require the use of a down range extender.

**DOWN RANGE EXTENDER**
This section (refer Figure 5), consists of up to four decade counters (IC16 through to IC19) and are all type 4017. The exact number required depends on the range extension required.

---

Figure 5 — Down Range Extender; Board 4.

Figure 4 — Voltage Controlled Oscillator (VCO); Board 1.

Note 1 — IC8; all unused inputs go to 0V.
Note 2 — * Indicates circuit test pin.
Note 3 — CX = 56 pF.
If an asymmetrical output wave form is considered satisfactory, then two chips may be saved by using two only 4518 duals in lieu of the 4017s. However, the author recommends the 4017s, and strongly suggests the fitting and wiring of all four sockets. This, plus the relevant pins, makes it a simple matter to add extra options at a later date.

Stability is assisted by the use of high values of C in the feedback path, thus reducing to a minimum, frequency shifts caused by the reaction of transistor and power supply variations, etc. The signal is lightly coupled into TR7 which provides high gain and buffering, thence to TR8 for shaping to drive Board Three.

Figure 6 — Power Supply.

References: 1. 10 MHz Temperature Controlled Oscillator, AR, September and October 1986

Figure 7 — Clock Oscillator; Board 7.

POWER SUPPLY.
This is a comparatively simple circuit (see Figure 6), and follows convention. 240 volts "mains" supply is fed via a fuse and SPST toggle switch to a 240/15 volt power transformer (Catalogue No M2155). Output from the 15 volt secondary is fed to a one amp bridge rectifier. Adequate filtering is provided by a 3000 uF can-type electrolytic capacitor.

Two voltage regulators are used, connected in series. The 15 volt source is derived from IC20 (7815) and the 12 volt from IC21 (7812). This is a comparatively simple circuit (see Figure 6), and follows convention. 240 volts "mains" supply is fed via a fuse and SPST toggle switch to a 240/15 volt power transformer (Catalogue No M2155). Output from the 15 volt secondary is fed to a one amp bridge rectifier. Adequate filtering is provided by a 3000 uF can-type electrolytic capacitor.

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CRYSTAL CLOCK OSCILLATOR
This will be a 10 MHz crystal oscillator of some description. For those of you who have not read my previous article on crystal oscillators, or who choose to use an unovened oscillator, a brief description of a suitable type will be presented here. In fact, the unit was initially briefly described of a suitable type will be presented here. In fact, the unit was initially designed as number five and is built onto a "Plug-in IC Board" Catalogue No H5610. Refer Figure 7 for the circuit diagram.

It uses four type BC108s, or similar, transistors. TR5 and TR6 are used for the oscillator proper. Darlington configuration is used as better stability is obtainable with this circuit.

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in October 1983, an article, Hamming it up on the Airwaves, written by Jo Wiles, appeared in the magazine New Idea. This was a story arising from interviews with Margaret VK3DML, Mavis VK3KS and Kim VK3CYL, who had narrated to Jo their experiences in amateur radio.

As the trophy is large, and forwarding it would have been very expensive, it had been decided that a certificate nearing a photograph of the trophy would be sent instead. Jill nevertheless retains the honour of being the first Australian YL novice to win the trophy and to have her name engraved on it. Thanks to further coaching from Wendy, Jill is now VK4ASK.

In 1985, unfortunately no YL novice entered for the trophy, but it is hoped that the 1986 ALARA Contest which takes place on November 8, will see a number of Australian YL novice operators competing for this magnificent award. It will be on display in the Victorian Divisional Office.

FLORENCE MCKENZIE MEMORIAL TROPHY
Mavis and Ivor Stafford VK3KS and VK3XB
16 Byron Street. Box Hill South, Vic. 3128

The ALARA Contest of 1984 featured for the first time the Florence McKenzie Memorial Trophy which had been presented to ALARA by the Townsville Amateur Radio Club and which was now offered as the Award to the Australian YL novice operator gaining the highest CW score in the Contest. Jill scored 162 points and was awarded the trophy.

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This article describes a hardware based RTTY test generator which is capable of generating a number of pre-programmed fixed messages or a continuous stream of single characters. It can generate either ASCII or Baudot with a wide range of shifts and speeds.

INTRODUCTION
As described in a previous article, see Amateur Radio April 1986, I decided that I would like to be able to decode the many RTTY signals that can be heard across the HF bands. In due course, a rather sophisticated, (an alternative description is over-complicated), decoder offering many options had been designed and was just about finished. At this point, the problem of testing it was considered. The obvious alternatives were to either use off-the-shelf decoder offering many options had been described in a previous article, see AA Radio April 1986, or to build a test generator that is capable of decoding the many RTTY signals that can be heard across the HF bands.

The parallel data is generated either by a ROM or a group of up to eight switches. If the ROM is selected, a continuously repeating message of 64 characters is generated. This length was arbitrarily selected as being a convenient length that would contain "The quick brown fox, etc."
The ROM used is a 2716 which will store a maximum of 2048 characters. The data stored in the ROM can be arranged in a number of ways; ie either as a large number of short messages or a small number of long messages up to the capacity limit of the ROM. In my case, I have chosen a message length of 64 characters which then allows me to have a total of 32 different messages. If the switches are selected instead of the ROM, a continuous stream of characters as defined by the switch setting will be sent. Since the data path is a total of eight bits wide, both ASCII data (seven bits) or Baudot (five bits) can be easily handled. Also connected across the eight data lines to the UART is an octal buffer that drives eight LEDs. The LEDs allow the data input to the UART to be monitored.
The serial data stream from the UART drives the logic input of an XR2206 function generator IC. The logic level input causes either of two timing networks to be selected, so generating one of two tones, depending on the logic state at the time.

DETAILED CIRCUIT DESCRIPTION
1. The UART
The UART is a very versatile, widely used integrated circuit which provides a programmable interface between an asynchronous serial data channel and a parallel data channel.
The transmitter section converts parallel data into a serial word which includes start bit, data, parity bits (if selected) and stop bits. The receiver converts a serial data stream of the same format as that being transmitted into a parallel word whilst automatically checking start bit, parity (if selected) and stop bit/s.
In addition to the parallel data bus lines, a number of control and status lines are available to monitor the state of the circuit and control it.
All UARTs of the type used in the circuit to be described are functionally interchangeable although some features, such as power supply requirements, vary. Some of the UART programmable characteristics are as follows:
- It can operate full or half duplex, transmitting and receiving simultaneously at different Baud rates.
- The word length may be five, six, seven or eight bits; parity generation/checking may be odd, even or inhibited.
The number of stop bits may be either one or two with 1.5 bits automatically selected when transmitting five bit code.

The above description shows that the UART can form the basis of a versatile test generator that can generate a wide variety of serial data formats including the common five bit Baudot codes and seven bit ASCII, depending on the parallel data available.

2. Serial Data Generator

The serial data generator (see Figure 1), takes a parallel data word up to eight bits wide and converts it into a serial data stream at a rate determined by a variable clock generator.

Two, four bit counters (IC1 and IC2) are connected in series to form an eight bit counter of which six bits are used. This length counter generates a sequence of 64 addresses which drive the six least significant address lines (A0 to A5) of the message ROM (IC4). Address lines A6 and A7 are pulled high and connected to switch S3 which allows up to four individual 64 character messages to be selected. Address lines A8 to A16 are not used for the time being and are tied low. It can be seen that extension of the address counter length and use of the other address lines allows considerable flexibility in message length up to the total ROM capacity of 2048 characters.

The address counter is clocked by the UART transmitter buffer empty signal. This positive going signal indicates that the transmitter data buffer is empty and may be loaded with data. As well as clocking the counter, this line also clocks a one microsecond delay monostable (1/2 IC3). After the delay, which is to allow the new data time to settle at the UART parallel inputs, a second monostable fires. This monostable generates a sequence of 64 addresses which drives the parallel transmitter data inputs of the UART.

The transmitter clock oscillator (IC5) is the common 555 operating as an astable oscillator. These two fixed levels allow a square wave, the amplitude is about 60 mV per k. Therefore, a value of 50 k would produce a sine wave, the amplitude is about 30 mV per k. The clock frequency, then the circuit becomes a simple FSK oscillator which produces a sine wave on either of two frequencies corresponding to the state of the input logic signal.

As well as clocking the counter, this line also drives the logic input of the XR 2206 function generator. These two fixed levels allow a square wave signal at a frequency of 16 times the output Baud rate, that is, at 50 Baud it is 800 Hz. The clock frequency is adjusted by a 20 k pot, to 270 Hz.

A set of three switches (S1/1 to S1/3) are connected to the UART to select the number of data bits and stop bits. Lines NDB1 (Pin 38) and NDB2 (Pin 37) are used to select the number of data bits (needed). Line NSB (Pin 36) select the number of stop bits needed. Table 1 below shows out the options available.

<table>
<thead>
<tr>
<th>NDB1 (Pin 38)</th>
<th>NDB2 (Pin 37)</th>
<th>Bits/Char</th>
<th>NSB (Pin 36)</th>
<th>Stop Bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L</td>
<td>5</td>
<td>L</td>
<td>1</td>
</tr>
<tr>
<td>L</td>
<td>H</td>
<td>6</td>
<td>L</td>
<td>2</td>
</tr>
<tr>
<td>H</td>
<td>H</td>
<td>8</td>
<td>L</td>
<td>1</td>
</tr>
<tr>
<td>H</td>
<td>H</td>
<td>8</td>
<td>L</td>
<td>2</td>
</tr>
</tbody>
</table>

This case, NPB is held high thereby turning parity off.

The serial data appears on line TS0 (Pin 25). A high level corresponds to "mark" and a low level corresponds to "space." The serial data drives the logic input of the XR 2206 function generator through a three position switch (S5). This switch allows either the data line or fixed high or low logic levels to be connected to the function generator. These two fixed levels allow the mark and space frequencies to be accurately set.

3. Data Monitor

An octal buffer driving eight LEDs is used to monitor the data being sent. (See Figure 2). Each of the eight inputs to a 74LS241 octal buffer is connected to the eight data inputs of the UART. The buffer outputs drive LEDs through appropriate current limiting resistors. The LEDs in my case consisted of a LED bar display which was a way of getting the eight diodes in a convenient package. Any collection of eight LEDs will do the job.

The maximum amplitude of the output signal is inversely proportional to the value of the resistor connected to pin three. For a sine wave, the amplitude is about 60 mV per k. Therefore, a value of 50 k would produce a sinusoidal signal of about six volts Peak-to-Peak.

5. EPROM Contents

As described above, this circuit has divided the ROM into a total of 32 messages each 64 characters long. For my testing purposes I

![Figure 2](image-url)

![Figure 3](image-url)
TABLE 2.

<table>
<thead>
<tr>
<th>MESSAGE 1</th>
<th>MESSAGE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>Hex Address</td>
</tr>
<tr>
<td>T</td>
<td>00</td>
</tr>
<tr>
<td>H</td>
<td>01</td>
</tr>
<tr>
<td>E</td>
<td>02</td>
</tr>
<tr>
<td>SPACE</td>
<td>03</td>
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<tr>
<td>Q</td>
<td>04</td>
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<tr>
<td>I</td>
<td>05</td>
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<tr>
<td>C</td>
<td>06</td>
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<tr>
<td>K</td>
<td>07</td>
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<tr>
<td>SPACE</td>
<td>08</td>
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<tr>
<td>B</td>
<td>09</td>
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<tr>
<td>R</td>
<td>0A</td>
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<td>0B</td>
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<tr>
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<tr>
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<td>U</td>
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<td>26</td>
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<td>D</td>
<td>29</td>
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<td>G</td>
<td>2A</td>
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<td>SPACE</td>
<td>2B</td>
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<tr>
<td>C</td>
<td>2C</td>
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<tr>
<td>LF</td>
<td>2D</td>
</tr>
<tr>
<td>CR</td>
<td>2E</td>
</tr>
<tr>
<td>FGRS</td>
<td>2F</td>
</tr>
</tbody>
</table>

As stated previously, some re-arrangement of the circuit will allow longer messages to be generated up to the capacity limit of the ROM.

**CONSTRUCTION**

Because the circuit was built as a source of test signals for the decoder, no particular effort was put into the design of neat circuit boards or layouts. Figure 4 shows the form of construction and layout used. It is not a thing of beauty and that is the best side; but it does work.

As can be seen, the circuit was built on a piece of vero-board using a number of wiring techniques ranging from conventional vero-wiring, point-to-point wiring using wire wrap and ribbon cable where the addresses or data had to be moved.

**COMPONENTS**

There are no particularly special components used in this circuit. The counter and monos may be either 74LS series TTL or even suitable CMOS equivalent. The clock buffer should be capable of providing up to 10 mA to drive each LED. The LEDs may either be one of the bar displays or a row of conventional LEDs which ever is easier.

The switches S2 (data group) and S1 (UART program) are eight-way and four-way DIP switches respectively. They were available and took up less room than ordinary toggles. Switches S3, S4, and S5 are conventional toggles.

The ROM is a 2716 EPROM which is relatively easy to get and inexpensive. It is also relatively easy to find someone who can program and/or erase them for you if you can't do it yourself.

The UARTs come under a variety of names, depending on manufacturer. The two that I have used are the MM5303 from National and...
the TR 1865 from Western Digital. Other similar devices are the 6402 and the AY-3-1015. One significant difference between some of these devices is in the number of power supply voltages required. All require +5 volts but some require -12 volts as well.

Note that if comparing information on different devices, quite often a given pin is identified by different abbreviated names. This is no problem since a comparison of the full data (if available) shows that the manufacturers have given the same physical function different names.

ALIGNMENT
The alignment of this circuit is quite straightforward although the use of a frequency counter is assumed.

Connect the counter to the FSK oscillator output and set S5 to “Set Space.” Adjust the potentiometer connected to pin 8 for the correct space frequency. Set S5 to “Set Mark” and adjust the potentiometer connected to pin 7 for the correct mark frequency. The desired output level can be adjusted using either a meter or oscilloscope across the output. Now set S5 to “Data” for correct operation.

SKY CHANNEL
Australia’s domestic satellite, AUSSAT, will be used for a new video and audio entertainment and information service. The service will beam material to hotels, licensed clubs and other similar outlets.

Called Sky Channel, and using a 30 watt AUSSAT transport, it is expected to serve 3000 three-metre dishes to be one of the largest private installations of its kind in the world.

The estimated target audience of five million people a week will see a mix of programs including major golf tournaments and other national and international sporting events, horse racing, video rock music and news.

PAPAL VISIT
The Polonia ARC, VK3CRR was recently granted permission by DOC to use the special call sign, VI3PVA, on all amateur bands despite the novice suffix.

The special call sign was granted to commemorate the Australian visit of Pope John Paul II, this month, hence the suffix PVA — Papal Visit Australia.

The special call sign will be operational from October 1 to December 1. A commemorative QSL card will be forwarded through the bureau to all stations that contact VI3PVA during this period.

—Contributed by Tad Dobrosanski VK3NCK
This program performs equations for solving most AC/DC problems in the shack.

If you want to find reactance, resistance, power, frequency, etc and your head forgets the formulas, as many of us do, then this program can make life easier.

The program is very easy to use and when it is run, the first thing on the screen is a menu giving a choice of 10 options, listed from 1 to 10. After the choice has been made with the entry of a particular number, a sub-menu will display the most common equations available for that particular choice.

**AC/DC MENU**

1. resistance or impedance
2. ampere
3. voltage
4. power
5. frequency
6. reactance
7. energy & q factor
8. charge & energy
9. time constant
10. transformers

**enter number**

Each of these equations are again numbered and a choice is made for the appropriate one.

At this point, it is necessary to simply answer the first and second prompt with the right value and the result will be printed at the bottom of the screen. Following is a pictorial example as all of this may sound confusing.

Suppose N.4 (POWER) is chosen from the menu, a sub-menu will appear giving a choice of five of the most common equations for POWER:

1. \( P = \frac{E}{R} \)
2. \( P = \frac{V^2}{R} \)
3. \( P = EL \)
4. \( P = I^2R \)
5. \( P = IS \)

Next, choose N.3 (P = E x L). As soon as number 3 is pressed the screen will again clear and a new screen displays the equation number, together with the actual equation chosen, and asks for the first value — in this case VOLTAGE?...just enter 240.

Now, a second value is asked for, AMPERE...input .5. When the RETURN is pressed, the answer is printed: POWER = 120.

At the end of each equation there is a choice to continue the same sort of equations by pressing Y for yes or N for no! If N is chosen then you are asked if you want to -E- EXIT to the main menu or -Q- Quit the program.

Following are some explanations of how the program works:

The first two pokes in line 5 set the border and screen colour (53280, 13) and (53281, 3). At the moment the (x) value is set for a monochrome monitor, but this can be changed to the right value for the particular monitor in use as this is very much a matter of personal choice.

Still in line 5, the print statement sets the colour of the characters — black in this case.

(Lines 10 through 90 prints my own logo which I consider to be very much part of the program, but it can be left out if your fingers are not as nimble as mine).

The main menu begins at line 100 through to line 185.

Line 185 is the input line which waits for the input of your choice (alphanumeric).

Line 190 converts the alphanumeric string variable to a numeric one (VAL(C$)). The reason for this conversion is to create a full choice input routine in line 195, so that if the entry is less than one or greater than 10, or is not a numeric one, the menu will remain on the screen unaltered until the right number is entered.

There has been the same error-free routine placed at each end of the sub-menu, but with a difference: instead of using the input statement as in line 185, to allow the input of your choice, this time the GET statement is used. This eliminates the need for the RETURN after making a choice and also does not give the usual flashing cursor, which can frequently be distracting.

In line 200, it can be seen that each main module starts at line 1000 with intervals of 1000, through line 10000. Line 999, with increments of 1000, has REM statements included to make program analysis easier.

From the previous example, N.4 was chosen from the main menu. Now let us examine the program from line 4000.

Line 3999 starts the beginning of the POWER module.

Line 4000 clears the screen.

Line 4005 contains two gosubs which are instructions to go to line 20041 and print whatever is in that line, and the same for gosub 20450. It may be noticed that a lot of instructions in the program are devoted purely to the cosmetic side, as I believe in not only delivering the result, but on how it is delivered.

Line 4010 through to line 4060 prints the submenu for POWER.

Line 4060 has another gosub, this time to line 2050.

Line 40510 prints a line dividing the submenu to the bottom half of the screen and it prints: ENTER NUMBER.

Line 40515 waits for the input with the GET statement.

Line 40517 converts the alphanumeric string into a numeric one only.

Line 40520 tells the computer to go back to line 4070.

Line 4070 is a very important one as it tells the computer to accept only an entry of 1 to 5 (if C1 < 1 or C1 > 5) then 4000.

Line 4080 tells the computer that, if C1 = 1 then go to 4200, if C1 = 2 then go to 4300, etc, etc.

In the example, equation N.3 was chosen from the sub-menu, so if C1 = 3 then go to 4500.

Line 4510 prints the equation chosen: \( P = \frac{E}{L} \).

Line 4520 asks for the value of the voltage = E.

Line 4530 asks for the value of ampere = I. \( E \times I \).

Line 4540 is the one that actually performs the equation: \( P = E \times I \).

Line 4550 prints P.

The routine for \( E \times I \) ends the last statement in line 4560.

After P has been printed, the program jumps to line 2000 and from this line through line 2030 are the routines which give a choice to continue.

All the other modules in the program are constructed very much the same way, using higher line number increments and symmetry to enable one to augment the program with some other equations.

All of the subroutines are nested at the end of the program beginning at line 20000.

As many people still prefer the old imperial system of measuring, included in the frequency module (choice 5 from the main menu) is a routine which gives the operator a choice of finding frequency or wavelength in either feet or meters.

This program will run on any machine using Basic as long as the formatting side is kept in mind. Some computers use A for epomination instead of V.
I M«-'BI-3B*IG0SUB28518 IFCK I ORC I>3THEI19988 
C»l CI GOTO 8299,8388,8489 
FPINT' P-POIER IN WATTS" 
GOSUB20863 
O^CXE 
W-PXT 
L-2XH'I»2 
N«-*BI 
1GOSUB28518-3B" 
PRINT* 
INPUT'S VOLTAGE*|E 
GOSUB2 9 099 iGOSUB284791 GOT0799.9 
24X415 XXXXXXXX 
ENERGI 
REM 
k 
CHARGE 
GOSUB20P99 t GOSUB284 79 tGOTO7606 
PRINT'S 0 FACTOR" |Q 
PRINT'S ENERGY—W*WATT HOURS' 
GOSUB269081G0SUB29470 t GOT08888 
GOSUB260381 PRINTO"CHARGE (COULOMB)* 
G0SUB26865 
INPUT*W?M CAPACITANCE (FARAD)'|C 
GOSUB268471PRINT "CH- » 2H'I » 2S* INPUT«l»W JOMIES'IH 
(AMPERE)' PPllir- VL»tllDUC1AMCE < HENRY > * 
PRINT-J* G0SUB28647iG0SUB28458 
PRINT-J* REACTANCE OW1S* 
GOSUB26845iPR INT 'B*- E/Ig* 
G0SUB2 8663 
PRINT* F-FREOUENCY HERTZ * 
G0SUB28888IG0SUB284 78iG0T06 8888 
GOSUB28843 s PRINT *B*C- l/2<XFXQ 
PRINT* XL-INDUCTIVE REACTANCE" 
G0SUB28863 
PRINT* S3 tfX-E/Il* 
PRINT* B2 B*C-l/2<XFXCB' 
G0SUB286431G0SUB28438 PRINT* MS I B<L-2*XFXL1' 
G0SUB2 8 888iGOSUB2B4 7 8I GOT06888 
G0SUB28843lPRINT'B<L" 2*FXLB' 
G0SUB28863 
REACT A/ ICE 
XXXXXX 
G0SUB2 884 3:PRJMTF'MHZ * 
PP I NT " C=CAPACITY ICE <FAPAD> FRINT* H»EflERGt" III MATT HOURS* 
PRtNT* P=CHARGF < COULC« IBS> . . . E-VOLTAGE' 
G0SUB28339 
PRINT* S3 BE»0/CB" 
PP IN'T * BHI B^CXEB* 
G0SUB26863 
GOSUB28845i PR II ITX" Off 1' S* G0SUB2 888 8iGOSUB284 7 8sG0T06888 REM 
Of 
INPUT'S TIME IN HOURS*|T 
INDUCTIVE REACT .< OHM' S) * 
18939 PRINT' S3....BT .RAT IO-SQR RT Zl'I 
18618 PRINT' Kil....BES-EPXNB"I 
18883 G0SUB28833 sGOSUB29438 
28633 PRINT'S BPESISTANCE/IMPEDANCEtB 'It RETURII 28045 PPINT'J*iPRINT'S YOUR EOUATI ON N.'Cl'ISl" 28068 RETURN 
are not made rich by it. 
get along without it, and none is so poor that they 
A smils — none is so rich or mighty that they can 
THOUGHT FOR THE MONTH 
A smile — none is so rich or mighty that they can 
get along without it, and none is so poor that they 
are not made rich by it.
Australian UHF television has had a recent channel re-shuffle by reducing the channel spacing from eight to seven megahertz. This has resulted in an additional seven channels. The UHF segments are divided into two halves — there is Band Four which extended from 526 to 582 MHz, Channels 28-35. There is then a gap of 21 to 603 MHz, the start of Band Five at Channel 39. It continues unbroken to 820 MHz, which is Channel 69.

It is interesting to note the highest Band Four channel — 35 — covers six of the nine megahertz of the amateur 50 cm segment. Many ATV systems refer to the operation as being on Channel 34, it is better referred to as Channel 35.

In VK1 and 2, the high power UHF systems are currently for the SBS service. There is Channel 28 in Sydney with 300 kW and Canberra has 200 kW. Newcastle SBS is on Channel 45, with 300 kW. Wollongong is on Channel 59 with 600 kW.

There are several translator networks in existence. The Kings Cross translator has five channels with 1 kW output. The channels used are 46, 49, 52, 55 and 58.

The Central Coast is to have three translator networks. The first has been established in Gosford, with the same channels as Kings Cross. To date the network has the Sydney and Newcastle commercial channels at 200 watts output. Further channels will be added later. Each Central Coast site has an eight channel capacity.

Elsewhere, there are some single translator systems to supply small regions, the channels currently being on Channel 66 and 69 with power outputs between 200 and 8 watts. The SBS has Channel 58 outlets at Goulburn, Cooma, and Tuggeranong in VK1. North Wollongong has a 2.5 kW translator for the ABC on Channel 50 and SBS on 54.

The Government has announced that future television expansion will be in the UHF region. This policy is not being accepted by some sections of the community who keep demanding VHF outlets. UHF is used extensively and in some cases, exclusively in parts of Europe.

**SYDNEY**

Multicultural Television Service

Service Area:

In Sydney, in and around the city within the area bounded by the Hawkesbury River to the north, the Blue Mountains to the west, and the Royal National Park to the south.

---

**UHF TELEVISION**

<table>
<thead>
<tr>
<th>Location of the transmitter — Gore Hill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PARENT STATION</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>SBS 526-533 MHz</td>
</tr>
</tbody>
</table>

---

**Kings Cross**

Service Area:

Edgecliff, Darlington, Surry Hills, Redfern, Darlington, Chippendale, East Sydney, Wolloomooloo, Kings Cross, parts of Potts Point, Rushcutters Bay, Double Bay, Kirribilli, Milson’s Point and parts of Elizabeth Bay. Darling Point, Paddington, Sydney City, North Sydney, Waverton, Neutral Bay, Cremorne Point, and Clifton Gardens.

Location of Translators — on top of the Hyatt Kingsgeate Hotel, Kings Cross.

<table>
<thead>
<tr>
<th><strong>PARENT STATION</strong></th>
<th><strong>UHF CHANNEL</strong></th>
<th><strong>UHF CHANNEL FREQUENCY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ABN (ABC)</td>
<td>2 (VHF)</td>
<td>652-659 MHz</td>
</tr>
<tr>
<td>ATN 7 (VHF)</td>
<td>46</td>
<td>673-680 MHz</td>
</tr>
<tr>
<td>TCN 9 (VHF)</td>
<td>49</td>
<td>694-701 MHz</td>
</tr>
<tr>
<td>TEN 10 (VHF)</td>
<td>55</td>
<td>715-722 MHz</td>
</tr>
<tr>
<td>SBS 28 (UHF)</td>
<td>58</td>
<td>736-743 MHz</td>
</tr>
</tbody>
</table>

---

**DESIGNATION & FREQUENCY LIMITS OF AUSTRALIAN TELEVISION CHANNELS**

<table>
<thead>
<tr>
<th>CHANNEL NO</th>
<th>VISION CARRIER FREQUENCY LIMITS — MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAND I</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>46-25 45-52</td>
</tr>
<tr>
<td>1</td>
<td>57-25 56-63</td>
</tr>
<tr>
<td>2</td>
<td>64-25 63-70</td>
</tr>
<tr>
<td>BAND II</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>86-25 85-92</td>
</tr>
<tr>
<td>4</td>
<td>95-25 94-101</td>
</tr>
</tbody>
</table>

---

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AMATEUR RADIO, November 1986 - Page 19
I read the article about Jack Sykes in Amateur Radio (see July, page 49), only a matter of weeks before setting out with my wife and son for the United Kingdom. My wife said that, as Slaithwaite was in the area of Yorkshire in which we would be travelling, why didn’t we take the copy of AR with us and see if we could manage to call in and show it to Jack Sykes. I thought that was a good idea.

On the day concerned, we were visiting a friend, Shaun, at Huddersfield, West Yorkshire, and asked him for directions to Slaithwaite. Shaun replied, in his Irish accent (an Irishman in Yorkshire? Well, if the Yorkshiremen can understand each other, they can understand an Irishman, and vice versa!), that Slaithwaite was only a short distance away, about half-an-hour's drive.

That would seem to present no problem to ordinary people, but my wife and I have a talent for getting lost in England, so we completed the short drive with some trepidation. (I have to comment here that I was driving and my wife was navigating, and I am not saying whose fault it was that we kept getting lost, but when you are driving you can’t look at a map at the same time, can you?)

Anyhow, we eventually found the road leading to Slaithwaite, and were there before we knew it. We then had to stop and ask directions of the locals. One of them told us that the town was full of Sykes, but when I showed him Jack’s picture in AR he recognised him immediately. “Of course!” he exclaimed, “The old man in broadcasting! Lives up on hill. Bear right at corner, follow road, bear left at next corner, and go to top of hill.” (They have a very economical speech in Yorkshire — why waste breath saying “the” and “a” ...!)

We followed those instructions and found ourselves high in the Pennines in front of a sandstone house which could have featured in “All Creatures Great and Small.” with a three element beam in the front. This had to be the house.

Mr and Mrs Sykes were thrilled that we had come all the way from Australia to show them their photo in the Australian AR.

We spent about an hour with them, and would have spent longer but it was right on dinner time when they have family. Jack spends most of his time on air talking to amateurs in the USA. They both love cats, but have only one at the moment — a male called Jane, who was found up a tree in a bag. It could only happen in Yorkshire...

We were struck by the seemingly limitless energy and enthusiasm for everything that Mr and Mrs Sykes have. If we can be as full of life as they are when we are even in our 80s (they are in their 80s) we will be content.

A little tip Jack gave me concerning Morse was, that if you stick your Morse key down with Blue—Tack — just a small amount at each corner — it will not move around. His hasn’t budged for years.

Jack gave me a short story (true) for publishing in AR. “And,” he said, “I thought it was rather humorous, and shall be very pleased if your readers think otherwise.”

**A MEETING WITH JACK...**

Jack (left) shows Bob his shack. The infamous AR is in the foreground.

I am afraid it was a most unsatisfactory peck but, never mind, practice ought to bring improvement and Edinburgh was still four hours away. My self confidence returned with a rush and soon we were jabbering away like old shipmates. She was a telegraphist in the *Women's Royal Naval Service* and her Morse was better than mine.

"What is the book I thought you were reading so intently?"

"Crime and Punishment."

"Oh dear; have you decided on mine?"

"You are guilty of careless talk, a serious offence under the defence of the Realm Act."

"And my punishment?"

"It could be the Tower of London but I have decided to defer sentence until after your examination and until then you are remanded in my custody, but no more Morse this side of Edinburgh. Your poor finger tips must be quite sore and, anyway, I have learned quite enough about myself for one day, my giltie."

More than 50 winters and a few summers have gone by since that memorable journey but my heartbeats still tap out her name and a death watch beetle answers...
LAND AND SEA SAFARI

Introducing Dick Lee, who at the time your Editor met him, quite by chance, in Cairns towards the end of August was about to become a VK4, replacing the call P29RL which he has held for many years. Dick, who was originally VK2ZNL, is a vulcanologist by profession and has been based in Rabaul for most of his time in Papua New Guinea.

Dick and two PNG yachtsmen who are also amateurs (P29EI and P29MO) have been preparing for months to travel to Perth for the America’s Cup. The two yachts (one 12 and the other 14 metres long) were scheduled to arrive in Cairns about September 18, and leave at the end of the month for VK6. Dick will set out by road at about the same time to provide a shore support facility.

He and one or two companions will be travelling in the converted bus (ex Port Moresby municipal transport) shown in the photographs. Since bringing the bus to Australia with him Dick has rebuilt its interior, and it is now a luxurious mobile home as well as a multiband amateur station. The roof carries banks of solar cells for auxiliary power supply, and also a solar water-heating system to cater not only for a commodious kitchen, but also a built-in bath and shower!

The “roo-bar” is a VK4 addition.

Both amateur and marine band HF contact will be maintained with the yachts as they proceed through Torres Strait and across to Darwin. The bus (fondly known as “Hanua Hound”) will in the meantime travel via Townsville, Mt Isa and Tennant Creek to Darwin, where both the land and sea crews expect to remain for about a week. Probably they will have reached Darwin by the time you read this. Then, early in November, they will progress around the WA coast, with Dick maintaining contact from the highway. They expect to rendezvous several times at such places as Derby, Broome, Port Hedland, Carnarvon and Geraldton, arriving in Perth during January 1987 to join the vast array of spectator craft around the America’s Cup course off Fremantle.

“Hanua Hound” on the side of the bus. (His name is yet to be added).

Frequencies to be used on the amateur bands have not been finalised at the date of writing, but probably the 80, 40 and 20 metre bands will all be used as they proceed around the Kimberley coast and head south. Both the road and sea parties will welcome OSOs with DX and VK stations generally.

Contributed by Bill Rice VK3ABP

SUMMARY OF CURRENTLY LICENCED STATIONS

This summary outlines details of amateur and citizen band stations currently licensed. Stations in respect of which licenses have been due for renewal for more than three months have been excluded from the listing. Figures are for the quarter ended June 1986.

Stations operated in Australian external territories have been included with those stations operating in neighbouring States of the Australian mainland in accordance with the following listing:

Antarctica — Tasmania; Christmas and Cocos-Keeling Islands — Western Australia; Norfolk Island — New South Wales.

<table>
<thead>
<tr>
<th>STATION</th>
<th>ACT</th>
<th>NSW</th>
<th>VIC</th>
<th>OLD</th>
<th>SA</th>
<th>NT</th>
<th>WA</th>
<th>TAS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amateur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beacon</td>
<td>20</td>
<td>19</td>
<td>18</td>
<td>28</td>
<td>5</td>
<td>1</td>
<td>23</td>
<td>2</td>
<td>98</td>
</tr>
<tr>
<td>Limited</td>
<td>56</td>
<td>864</td>
<td>1031</td>
<td>369</td>
<td>271</td>
<td>26</td>
<td>223</td>
<td>104</td>
<td>2944</td>
</tr>
<tr>
<td>Limited/Novice</td>
<td>16</td>
<td>333</td>
<td>306</td>
<td>227</td>
<td>127</td>
<td>19</td>
<td>93</td>
<td>42</td>
<td>1163</td>
</tr>
<tr>
<td>Novice</td>
<td>52</td>
<td>905</td>
<td>764</td>
<td>613</td>
<td>331</td>
<td>51</td>
<td>219</td>
<td>96</td>
<td>1163</td>
</tr>
<tr>
<td>Unrestricted</td>
<td>178</td>
<td>2785</td>
<td>2458</td>
<td>1410</td>
<td>1045</td>
<td>77</td>
<td>903</td>
<td>345</td>
<td>9201</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16437</td>
</tr>
</tbody>
</table>

| Citizen Band |     |     |     |     |    |    |    |     |
| 27 MHz       | 533 | 29705| 31798| 26988| 12695| 742| 10617| 3707| 116785 |
| UHF          | 186 | 13913| 14518| 16555| 13949| 219| 7272 | 2312| 69924  |
| Repeater     |     |     |     |     |    |    |    |     |
| Amateur      | 2   | 45  | 50  | 28  | 12 | 2  | 13 | 12  | 164    |
| CBRS         | -   | 30  | 20  | 14  | 1  | 1  | 19 | 8   | 131    |

VICSAT

9 Maroondah Highway, Croydon, Vic. 3136.
TELEPHONE: (03) 879 1155

Contributed by Bill Rice VK3ABP

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**SCHEDULE OF COUNTRIES WITH WHICH AUSTRALIA HAS RECIPROCAL LICENSING ARRANGEMENTS**

<table>
<thead>
<tr>
<th>ADMINISTRATION</th>
<th>CLASS OF CERTIFICATE OR LICENCE HELD</th>
<th>AUSTRALIAN AMATEUR LICENCE FOR WHICH HOLDER IS ELIGIBLE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Advanced Amateur Certificate of Proficiency in Radio</td>
<td>Full Privilege</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>Radio Amateur Station Licence Group D and E</td>
<td>Full Privilege</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group C</td>
<td>Limited</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>Novice</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Amateur Wireless Telegraphy Station Licence</td>
<td>Full Privilege</td>
<td></td>
</tr>
<tr>
<td>Israel</td>
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<td>Singapore</td>
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**INSATIABLE APPETITE**

Amateur Radio is always in need of a steady supply of articles for publication, whether they be short technical tips or long technical articles; even interesting anecdotes. Whilst articles on advanced and new techniques are needed, it must not be forgotten that new amateurs and novices are always interested in good basic items which the "seasoned amateur" may class as too basic for AR. So, write-up that project that has worked for you, as Amateur Radio has an enormous appetite for a well-balanced and varied diet.

Preparing an article for Amateur Radio is very simple. Just commit your thoughts to paper as you would when explaining to a friend over the air. Manuscripts may be clearly hand-written or typed original copies (no photocopies please, as frequently the photocopier prints a blank in a crucial portion of a technical explanation or formula). Include circuit diagrams if applicable — they do not have to be ready for publication (clear sketches are adequate), as AR's draughts-people will redraw them. Don't overlook a photograph too, but please be careful when writing captions on the back — many good photos have been damaged by heavy ball-point pen marks coming through or felt-tip pens smudging from the back of one photo to the front of another.
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AMATEUR RADIO, November 1986 - Page 23
ANOTHER RAAF OLD TIMER
Type T28 Transmitter

To continue the historical series of articles about old-time transmitters used by the Royal Australian Air Force, this month the Air Ministry Type T28 transmitter is described.

Quoting information from Group Captain E R Hall's book, A Saga of Achievement, the RAAF bought two of these MF transmitters from the RAF in late-1926. After constructing new transmitting stations at Richmond and Point Cook, they came into service in 1931/32. They were rated at 1.25 kW output, but from personal experience I consider this figure to be quite conservative.

Considering the date of acquisition, this transmitter was then a quite modern device, even if its specifications and operation seem strange 60 years later. One of the unique features of this transmitter was the means used to achieve an MCW type of emission; in fact this was its only mode of operation.

This transmitter was primarily intended for use in ground-air service and it served very successfully in the service until early 1942. A subsidiary service was the transmission of weather information with regular scheds on behalf of the Meteorological Bureau. Operational ranges of 600 miles (966 km), were common but were exceeded on occasion; the limiting factor being the shorter range of the aircraft transmission systems employed.

The operating frequency was 280 kHz, but the Richmond T28 was used on occasion to work an Indian RAF station on a frequency of 190 kHz. I do not know if this was an official service or just a yen on the part of the operators concerned for a bit of MF DX! If the latter, I am sure most readers will sympathise and applaud the effort!

The motor alternator unit was a beautifully constructed and balanced piece of equipment. Its design function was to drive from 50 Hz mains, a 400 Hz single phase alternator with a nominal output voltage of 200 volts, which supplied the primary winding of the HT transformer. From personal experience, I can state that this motor alternator averaged just over 22 minutes to run down from its full operating speed of 4000 RPM to a full-stop and that is a well balanced set of rotors in anyone's language!

Quite obviously, the operating speed of the system is determined by the motor, which is powered from the 50 Hz mains, and its speed is virtually constant. I cannot recall if the motor was synchronous, but I think it was. If we vary the field voltage of the alternator, the output voltage of the alternator can be increased or decreased from the nominal 200 volts. The frequency of 400 Hz will, however, remain constant because alternator field variations can have no effect on the 50 Hz motor speed. This then gives a means of output power control of the transmitter.

The 400 Hz 200 volt alternator output was connected to the HT transformer primary. This transformer was quoted to me as having a 100:1 voltage ratio and this would, in turn, mean a nominal transmitter HT of 20 KV. Varying the alternator output voltage as previously described would, of course, alter the HT in the same primary/secondary ratio and so give quite a large degree of power control of the transmitter output.

The rectifiers were "bright emitter football" triode valves and rheostat controls were available to set the filament currents of the valves. The T28 transmitter at Richmond W/T Station in 1942. The HT transformer is on the right labelled "Danger."

Strange to our modern ideas was the fact that no filtering was applied to the rectified output, so the voltage applied to the RF anodes was 800 Hz pulses from the full wave rectifiers. The RF final consisted of two "bright emitter football" triode valves connected in parallel as an oscillator directly coupled into the aerial. These valves were again fitted with rheostat filament current controls and these could be used to balance the anode currents if necessary. As the HT was 800 Hz pulsed DC from the unfiltered rectifier unit, the transmission was obviously modulated at 800 Hz, although rather crudely.

This raw 800 Hz note gave rise to a famous nickname. This technique and the use of MCW was common in earlier days as MCW could be
The antenna switch and horn gap lightning arrester on the wall.

From left: The exciter, 12 pole alternator and motor.

copied on TRF receivers and regenerative receivers that mysteriously went out of oscillation or superhet when BFOs failed.

The RF coil was wound of copper tubing and was about three feet (1 metre) in diameter and about eight feet (2 metres) high. It was large enough for a person to stand inside; but strangely, it proved impossible to find any volunteers! The aerial was directly coupled to the RF coil and was a three-cage flat top of some 500 or 600 feet (152 or 182 metres) in length and was supported from two 125 feet (38 metres) high steel towers. I cannot recall the aerial current, which was substantial, but the oscillator current was normally 160 mA. At 20 kV this was an anode input power of 3.2 kW. With a rated output of 1.25 kW this gave an efficiency of less than 40 percent, but this may be considered reasonable for an oscillator coupled directly to the aerial. I have varied the transmitter power as described and oscillation ceased at approximately 2 kW input and the transmitter was still running at an input power in excess of 5 kW. I will admit it was "kind of knocking at the knees" at this power level, however.

When I was posted to Richmond W/T Station in 1942, this old transmitter had been retired and was only on strength as a standby unit. So any running experience I had of the marque was by experimenting at times when the channel was not in use or when the alternative transmitter was out of service. Things were not helped by the absence of any instruction manual at that time.

When the Japanese entered WWII, it became imperative to keep airborne W/T traffic to a minimum and radio silence became almost mandatory on air-ground watches. As 280 kHz was the main air-ground channel from Richmond at that time, a procedure of sending a 15 second dash from the ground station each 10 or 15 minutes was introduced to wake aircraft operators up and enable D/F bearings to be taken from aircraft where this facility was installed.

Unfortunately, the poor old T28 just was not up to this sort of treatment, as the oscillator anodes would quickly blush, go white hot and then glisten as they were on the verge of melting. Therefore, a newer type of transmitter was used for this service and the poor old veteran was held as a standby at much reduced ratings.

Finally, after many successful years of service, the raucous notes of the T28 faded from the service scene.

Try This!

CAN'T HEAR THE MONITOR?

Eric Smith VK3CES
Fairy Dell Road, Monbulk, Vic. 3793

Tests made with operators on the Early Bird Net have shown this idea to be effective.

Owners of the Yaesu FT7 (and other similar rigs), when operating CW, cannot hear the monitor when the key is closed in the receive mode. Pressing the keys turns on the transmitter in a type of fixed and unalterable VOX situation.

This makes it difficult to net accurately and, in net operation in particular, can be a source of frustration and nuisance.

The solution is simple. A buzzer, pitch-pipe, oscillator or any other device which can be accurately tuned to the same note as the rig's monitor (usually in the vicinity of 700 to 800 Hz) is all that is necessary.

When a station is heard, the oscillator, or whatever, is switched on and the incoming signal is then tuned to unison with the oscillator note. When the key is depressed it will be found that the rig is "netted."

Accuracy depends on the ability of the operator to produce unisons, firstly in setting the oscillator frequency and secondly in matching the incoming signal to the oscillator note. Desirable features in an oscillator used for this purpose would be firstly a fixed frequency (pitch) and a volume control so that weak signals would not be swamped.

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For over 15 years the ABC terrestrial television network has been used with outstanding success for precise time comparisons in Eastern and Central Australia. This has enabled clocks and frequency standards to be compared with each other with submicrosecond accuracy and better than 100 nanosecond precision on a daily basis.

The method has depended on the television synchronization signals transmitted by the ABC stations, especially those from the ABC Gore Hill (Sydney) studio which was transmitted over stable terrestrial bearers to cities and towns around Australia — users measured the time of arrival of a particular sync pulse according to their own clocks, and exchanged measurements amongst themselves to determine the relative phases of the clocks.

Delays in the bearers were calibrated occasionally by carrying a portable caesium standard between users to establish relationships between the clocks directly.

In May 1986, this technique ceased to be viable in general between cities and towns because of the progressive introduction of FEDLOCK frame store at local television transmitters, which puts arbitrary delays into the total network, and because of the use of AUSSAT to transfer programs to local stations.

A composite system is now being introduced using the Global Positioning System (GPS) of satellites for comparisons between a few major laboratories, ABC television from AUSSAT to link with other places in the South-East beam, and local terrestrial television within cities.

Initially, this system will link clocks within AUSSAT’s South-Eastern footprint, while full national coverage may eventuate using the national beam.

GPS receivers have been in use since July 1983 to give daily comparisons of the clocks linked by television against the Master Clock at the US Naval Observatory (USNO) in Washington, DC. As a result, a selection of Australian clocks have been, since mid-1984, contributing to the formation of Co-ordinated Universal Time (UTC) by the Bureau International de l’Heure (BIH) in Paris.

**NEW TIME SCHEDULE**

From May 19, 1986, the time for taking television measurements changed. The new schedule is:

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<th>SIGNAL MEASURED</th>
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<tr>
<td>0800*</td>
<td>ABC from AUSSAT</td>
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<tr>
<td>0900*</td>
<td>Channel 9 terrestrial</td>
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<tr>
<td>1000*</td>
<td>ABC from AUSSAT</td>
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These times are in Universal Time (GMT) and correspond to 10 am Australian Eastern Standard Time, or 11 am Australian Eastern Daylight Saving Time.

The schedule change was decided upon by the National Standards Commission (NSC) Working Group on Precise Time Comparisons, and takes advantage of the changes in the television method to bring the schedule into line with standard international practice.

**TERRESTRIAL TELEVISION**

Within the ABC area and serviced by the same common television transmitter local television will continue to be used. The terrestrial ABC television links between Melbourne and towns in Victoria and south-eastern New South Wales are owned by the Australian Research Laboratories in Melbourne plan to invoke the terrestrial SBS network for a link to Adelaide. Channel 9 may also continue to be used for some time yet. This enables all clocks in the city to join the Australian time network if there is also a GPS or AUSSAT receiver in the same locality.

**AUSSAT TELEVISION**

The first Australian national domestic satellite is now broadcasting television programs continuously to each footprint, and HACBSS receive-only earth stations with 1.5 metre antenna are available commercially.

Experiments at CSIRO National Measurements Laboratory (NML) in Sydney using a 1.8 metre beam at 35 degrees S, 200 degrees K, low noise amplifier, commercial B-MAC decoder and the ‘traditional’ television sync pulse selector have demonstrated ease of operation and insignificant jitter in time-interval measurements. The daily pattern of range variations due to the satellite’s orbital characteristics is readily observed.

Similar experiments at Natmap’s Ororal Observatory using an all-commercial 1.5 metre earth station have confirmed the NML findings.

NML will monitor the daily range variations between the satellite and the NML antenna, and simultaneously do traditional terrestrial measurements on the Gore Hill transmissions. For earth stations at remote known locations within the SE footprint, 25 microsecond accuracy time comparisons can be achieved provided the satellite remains within its specified orbital bounds.

Within a few months, it is expected that seven of the places with GPS receivers will also be equipped with AUSSAT earth stations. Normal measurements of the time of arrival of a common television sync pulse from AUSSAT at these ‘base stations’ will enable calculations of the satellite’s position with sufficient accuracy to achieve time comparisons to other stations at known locations which are equipped only with a clock and a commercial HACBSS receive-only earth station.

Given four GPS/AUSSAT stations equally spaced around the perimeter of a region; eg South-East beam footprint, and with calibration of receiver delays, time transfer accuracy within the region would be limited by measurement jitter and environmental effects. Even with non-optimum configurations, 100 nanosecond accuracy generally is anticipated. It is planned to establish a service which will be available anywhere within the region.

**GLOBAL POSITIONING SYSTEM (GPS)**

At present there are seven useful GPS space vehicles in 12-hour orbits, and time comparisons against the USNO Master Clock can be made several times daily with accuracy approaching 50 nanoseconds from almost anywhere in the world.

When the full constellation is available, by about 1990, its 18 satellites will provide virtually continuous coverage anywhere. Preliminary results are given in real time and it has proven extremely accurate.

The NSC Working Group recommended in 1985 that comparisons be made using GPS wherever possible.

At present, units are known to be operating in Sydney, Melbourne, ACT (2), Alice Springs, Yarragadee WA, and possibly Adelaide. However, commercial receivers (“Time Transfer Units”) cost over $130 000, a price difficult to justify by many users of precise time.

Hence, the current network consists of high precision common-view GPS time transfer links between the NML and the ABC, CSIRO National Measurements Laboratory and local television comparisons within these cities.

The use of AUSSAT is designed to extend this network, at moderate cost.

**DATA CO-ORDINATION**

Daily television measurement numbers are transmitted by NML, Telecom, and the Division of National Mapping (Natmap) and are sent to users on a weekly basis to enable the effects of television transmission time and propagation delay to be removed from the users’ readings. Also, all interested users send their television and GPS measurements to Natmap.

The method of the ‘mean time scale’ Co-ordinated Universal Time in Australia (UTC(AUS)) which provides a common reference and relates individual clocks to international time scales. Natmap is making provision to incorporate AUSSAT measurements into the time scale and to calculate the effects of AUSSAT’s performance.

**FUTURE IMPROVEMENTS**

The national beam holds promise for providing a truly national time comparison service. The principal problems to be studied are antenna size needed, geographical distribution of base stations and GPS media effects.

The methods described above require exchange of information between users and a certain amount of post-processing to obtain final results. NML is looking at possibilities for improving a timing signal on AUSSAT transmissions in such a way that the signal is ‘on time’, and the reception is such as to provide an adequate ‘real time’ service for many users within the satellite footprint.

Exchange of data is at present accomplished by letter, fax and the CE Mark III Time-share system.

The growth of digital data services provided by Telecom, AUSSAT and others should lead to improvements in service quality and extent. The Working Group is studying these with a view to recommending an inexpensive method.

**APPLICATIONS**

The changes to the schedule and the introduction of new methods of precise time comparison are responses to the needs, largely by standards and calibration laboratories and astronomical observatories, to maintain precise standards of time and frequency and to ensure the accuracy of their relationships to international time scales and the SI second.

These needs were clearly demonstrated at the IRE5 Conference on Precise Time and Frequency in Canberra in August 1980, and at the NSC Technical Workshop on Precise Time Comparisons in Sydney in February 1984. The services now in place and under development will provide adequate timing references, conveniently and at low cost, to users in South-East Australia and, shortly, in the whole country and beyond.

Special interest in such a system has been shown by electricity authorities, geodetic surveying organisations, exploration companies and the digital communications industry. It is believed that all these and many more will benefit from the services provided.

**Acknowledgments**

The users are most appreciative of special arrangements made by the ABC during the FEDLOCK phase-in over the last two years. AUSSAT Pty Ltd has provided much useful information.

For further information or suggestions please contact:

- Dr K Harvey, CSIRO National Measurements Laboratory, PO Box 218, Lindfield, NSW, 2070 (02) 467 6724.
- Dr M Luck, Division of National Mapping, PO Box 31, Belconnen, ACT, 2625 (062) 52 5172 or 35 7285.
- Dr R W Harris, Telecom Australia Research Laboratories, PO Box 249, Clayton, Vic. 3168 (03) 541 5124.
- Dr G Harvey, National Standards Commission, PO Box 282, North Ryde, NSW, 2113 (02) 888 9522.

--Reprinted courtesy Amateur Radio, August 1986 from a paper from the National Standards Commission--
SECOND ADELAIDE SCOUTS, VKSBPA
& AMATEUR RADIO

Bob VK5ADR, Club Leader, with the 2nd Adelaide Cub Scouts and Scouts and 1st Torrens Park Brownies and Guides. From left: Sonja, Jane Melanle, Katrina, David (with mic), Nick, Adam and Tony.

Our first Jamboree on the Air (JOTA) was in 1979. With the help of Mike Hart VK5NNN (Mike now lives in VK3 with fishing his number one interest) and Bob Murphy VK5MM, who helped tune the first antenna — an inverted Vee dipole. Seven contacts were made and 25 Scouts, Leaders and Parents visited the shack.

1980 was a big year. In May, Bob Odd passed the NAOCP examinations and received the call sign VK5NFU. July saw the arrival and erection of a rural-type windmill tower from Dennis Myers. This tower then supported inverted Vee antennas for 80, 40, 15 and 10 metres and a two metre J-pole.

Amateur station VK5BPA was granted a licence on July 31, with Bob VK5NFU as Club Leader. August 20, the Club purchased an FTDX 401, and on October 13, it became affiliated with the WIA (SA) Division. During November, Bob upgraded from VK5NFU to VK5ADR and December 5, saw the first monthly meeting of the Club with Bob the only attendee. (Attendances improved with 12 present for one meeting). Definitely a memorable year.

The Shack was a meeting room in the Scout Hall with a special desk and notice board for the few OSL cards which were received. That JOTA would not have been possible without the help of Mike VK5NNN/ZMH, Rod VK5AN, Leith VK5OQ and Les VK5ZW, all of whom donated their time, enthusiasm and expertise for the weekend.

On September 13, 1981 a home-brew antenna, faithfully constructed by Bob VK5ADR, was mounted on the tower and Les VK5ZW, loaned his rotator for JOTA 1981.

Early 1982, saw the purchase of two, two metre rigs and the removal of an ex-Telecom RRX hut to the rear of the Scout Hall. For JOTA 1982, Rod VK5AN set-up a RTTY station as well as the usual communications equipment.

The first meeting in the new shack was held on July 2, 1983 with Don McDonald VK5ADD, Assistant Commissioner for Scout Radio Activities, Adrian Snell VK5ZSN, and some Scouts present. During December a two metre RTTY modem and Model 100 were put into service.

On October 10, 1984 an 11.5 metre (38 foot) pole was erected next to the shack to accommodate ATV, UHF and two five-eighth two metre antennas. Thanks to Rod VK5AN, Don VK5ADD and Craig VK5ZAW for their assistance with this project. A dipole antenna was later also transferred to the pole.

On May 17, 1985 the Club were honoured to use the WIA 75th Anniversary call sign, VK75A. In August, the Scout Patrols built a flashing LED project and in October the Club bought a three-element beam. Bob VK5AZ donated a rotator and Colin VK5KCR a teletype terminal. Adrian VK5ZSN, later donated a CRO for the RTTY.

Since the Club's first participation in JOTA, 317 young people have taken part and an enjoyable time was also spent during JOTA this year.

The Club has operated from many portable locations since its inception, usually where member Scouts are camped. The Club has also been involved in many activities with the WIA (SA) Division during South Australia's 150th Anniversary.

Club activities involve many nights in the shack with the member Scouts and Guides as well as visiting Scouts and Guides from neighbouring districts. Each year the Club participates in the John Moyle Memorial Field Day and the Remembrance Day Contests.

The next electronics project planned for the Scouts is the construction of a CW oscillator. Planning is well under way for VK5BR the South Australian Scout Association station, to be on air for the 10th Australian (world invitational) Rover Moot which will be held at Woodhouse, Stirling in the Adelaide Hills from December 28, 1986 to January 8, 1987.

The 15th Australian Jamboree will be held at Woodhouse during Christmas/New Year, 1986-87, and planning has commenced for VK5BP to be operational at the site.

NOW AVAILABLE

The 1986-87 WIA Call Book is now available from Divisional Offices.

Price: $6.50 plus post and packing
The preparation and issuing of Band Plans was discussed at the 1985 Federal Convention. As a result, the following resolution was passed:

"That the Federal Executive develop, coordinate and publicise principles and procedures for the development of a Wide Band Frequency Band Plans by Council. These should ensure that there is the maximum possible involvement of Divisions and adequate coordination of views concerning all authorised modes prior to the Convention."

To assist this process, the Federal Technical Advisory Committee (FTAC) documented the existing Band Plans. These were the subject of a series of articles in AR earlier this year. "Band Planning" issues 42 and 43 reviewed the wide band Plan for each country, taking into account material from a variety of Department of Communications (DOC) sources.

Following comments from a number of amateurs, amendments were made to the paper, which was then printed and circulated for discussion at the 1986 Federal Convention. A brief presentation was made on the highlights of the paper by the Chairman of FTAC following extensive discussions, both in the formal Convention sessions and during "meals" and other breaks, the paper was adopted with some minor modifications.

The Band Plan paper consists of an introduction, followed by some comments on spectrum management and gentlemen's agreements. A section on Band Planning Philosophies lists six principles for successful Band Plans:

- Accord with international band usage
- Consider all users
- Spectrum must be allocated according to mode requirements and usage
- The Band Plan must be dynamic yet evolutionary
- The Band Plan must include forward thinking
- The Band Plan must be promulgated to all users

DEFINITIONS

An explanation of the "Layered Band Plan" (see February AR, page 20), is followed by the definitions that apply to modulation mode and band plan. The following definitions have been accepted for the Amateur Radio Service in Australia:

1. 'CW' designates Telegraph (Morse) with a maximum bandwidth of 200 Hz (200H1A/ 200H1B).

2. 'Narrow Band' designates Narrow Band modes (other than CW) occupying bandwidths less than 1.12 kH. Narrow band modes use an appropriate Radio Modulation technique and speed to stay within the designated bandwidth. Narrow band modes include ASCII, RTTY, AMTOR, and Packet Radio.

3. 'Wide Band' designates Wide Band modes occupying bandwidths greater than 1.12 kHz. On bands below 50 MHz the occupied bandwidth is limited to less than 6 kH except for the 26.960 to 27.210 MHz band (A3A) and the 14.000 to 14.350 MHz band (A32) which shall not extend beyond the limits of the band being used. Wide band modes include SSB, NBFM, FAX, SSTV, and Data Transmission at greater than 300 Band. It also includes ATV on bands above 450 MHz.

The term "exclusive allocation" has been used previously to indicate a single allocation to the amateur service within Australia. However, the correct term is "primary service." Some amateur Band segments (and even some complete bands) have the status of "secondary service." Stations of the primary service must have priority over stations of the secondary service. It should be noted that the use of terms "primary" and "secondary" service in the following Band Plans refers only to the status of the allocation within Australia and does not cover assignments which may be made in other countries to other services. The 7.000-7.100 MHz segment and the 10k HZ to 18 GHz to broadcast stations is an illustrative example.

Then follows the Band Plan for each amateur band from 1.8-240 MHz. Each Band Plan consists of a preamble describing the general allocation and any requirements that have to be taken into account in allocating frequencies for specific uses. This is followed by a description of the frequency segment with any details of specific uses and any necessary footnotes to describe the reasons for a particular allocation. A graphical presentation of this information is also included in the Band Plan. Also included is the status of each amateur band as indicated in the Australian Table of Frequency Allocations, together with other relevant information on band usage.

CONCLUSION

The paper concluded with the following conclusion and recommendations:

"The Wireless Institute believes that the procedures currently used by the Department of Communications in allowing the Amateur Service to develop its own Band Plans is the correct approach. Further, the resolution passed at the 1985 Federal Convention and quoted in the first paragraph of this paper is the most appropriate way of developing and approving Band Plans. Accordingly, the following recommendations are made:

1. That the revised definitions given in Section 6 of the paper be approved
2. That the Band Plans contained in Section 7 of this paper be approved as the official WIA Band Plans."

COMMENTS AND DISCUSSION

The paper was discussed at the Convention on a band by band basis. Some minor amendments were made to the plans for the 7 and 50 MHz bands (see later). The above two recommendations were then accepted by the Convention. Further work has since been carried out on the drawings and the revised drawings are now available for viewing.

The paper concluded with the following conclusions and recommendations:

1. That the revised definitions given in Section 6 of the paper be approved
2. That the Band Plans contained in Section 7 of this paper be approved as the official WIA Band Plans."

A minor addition was made to the notes accompanying this Band Plan. The complete notes are as follows:

"The Australian authorities permit Wide Band modes in this narrow amateur allocation and Australian amateurs have seen fit to utilise this privilege, for it is a useful band for interstate contacts as well as DX. The recommended usage for Wide Band modes is within Australia only but the amateur community may wish to establish a gentlemen's agreement to not use Wide Band modes (phone) at all. Note that the Narrow Band Plan completely aligns with the Region 1 RTTY segment. "Region 3 have opted to permit only CW and Narrow Band operations across the full band allocation. The use of Wide Band mode of any kind should, therefore, be restricted to communication within the VK call areas only. Further, only the minimum power necessary to reliably maintain Wide Band contacts should be used."
the Department of Communications. Since the Convention, the use of the 28 MHz band from 29.520 to 29.580 MHz and a deviation of 5 kHz. Repeater outputs would be from 29.500 to 29.680 MHz, with repeater inputs moved to 29.100 to 29.280 MHz. This matter is currently being followed up with the US.

As can be seen, amateur radio Band Plans are not a static thing! Copies of the complete paper are available from the Federal Office or from your Divisions Federal Councillor.

I would like to thank all of the amateurs who contributed to this paper, both during the initial drafting and as a response to the printing of the earlier material in Amateur Radio. As a result of the wide ranging discussions that had been held right around Australia on this topic, the Federal Councillors were well briefed when they arrived in Melbourne for the 1986 Convention.

REFERENCES:
2. The Region 3 Band Plans, (agreed in Auckland, November 1985) and reported in Amateur Radio, February 1986 issue.
3. The Region 1 and UK Band Plans, reported in RadCom, January 1986 issue.

Figure 3. Amateur Satellite Secondary Service

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CA-20m ......................................... $39
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AMATEUR RADIO, November 1986 - Page 29
The Yaesu name has, over the last few years, been synonymous with well-designed general coverage communications receivers. Starting with the famous FHG-7, the first really satisfactory, popular-priced receiver. Then the FRG-7000, which featured a digital frequency and clock readout. The FRG-7700, simplified operation by eliminating the preselector tuning, and the FRG-8800 which has been updated with keypad frequency entry and a multi-function LCD display. The FRG-8800 has been on the local market now for nearly two years and, while this review is perhaps somewhat late, it has given us time to take an extended look at this interesting receiver.

Firstly, let’s take a closer look at the 8800 and see what it has to offer, both to the amateur radio operator and the keen shortwave listener.

On first inspection the new LCD display is the feature that makes the greatest impact. It combines the frequency readout, S-meter, mode indicator, selectivity status, memory channel number and scan mode selected. I have to admit that the thought of an LCD bar-graph S-meter did not impress me initially, but after extended use of it I am converted to the idea.

Keypad.
The 20 button keypad is used to directly select any frequency within the tuning range, which in the case of this review receiver with the optional VHF converter, covered from 150 kHz to 29.999 MHz and 118 to 173.999 MHz.

All modes are built-in as standard and they include AM, SSB (upper and lower), CW and FM.

With the optional VHF converter the FM mode is especially useful for the two metre amateur band. Two, 24-hour clock modes can be selected in place of the frequency readout and these can be arranged to switch the receiver on and off at pre-programmed times. External clock switching will also operate auxiliary equipment such as tape recorders.

The general presentation of the receiver is good. All controls are well spaced out and of reasonable size. The forward facing speaker produces excellent audio quality. The memory system enables frequency mode and selectivity selection to be retained. However, it seems odd that Yaesu did not provide a Lithium battery system to retain this information. Instead, three AA pen light cells are fitted into a rear panel container. As long as the receiver is connected to an AC power point, there is no drain on these batteries, but should the AC supply be removed the drain on them is quite high and the life of them is rather short. Just why Yaesu did not install a Lithium is known only to them.
THIRDLY, THE PROGRAMMED BAND SCAN. SCAN LIMITS SELECTED INDEPENDENTLY. AS AN EXAMPLE, PRESS 21 TO SCAN 21 PRESELECTED MEMORIES—ONLY ARE SCANNED, AND THEY WILL APPEAR IN THE KILOHERTZ SECTION OF THE DISPLAY, BUT PRESSING THE ORANGE MEGAHertz BUTTON WILL PUT THEM IN THE MEGAHertz SECTION. THE NARROW BAND SCAN channel is most effective against car ignition noise, although I find that car ignition is not the problem it used to be. Most cars seem to be very well suppressed these days.

Three types of frequency scanning are built into the FRG-8800. These are memory scan in which each of the 12 memories is selected in turn. The scan pauses for about half a second on each channel and can be stopped and started by pushing the pause button.

The second is a selective memory scan in which preselected memories only are scanned, and thirdly, the programmed band scan. Scan limits are programmed into the memories and the scanning rate can be changed by selecting either the fast or slow tuning rates.

In the manual tuning mode, the two selectable tuning rates are well chosen. The slow tuning rate is about six kilohertz per turn of the tuning knob. In the fast rate, 125 kHz are covered per knob revolution. In view of this, it is a little hard to know why Yaesu have added a fine tuning control. I really cannot find any practical use for it at all.

With the exception of the FRV-8800, all of the other options are remnants from the earlier FRG-7700 receiver. In saying this, I do not mean to infer that they are not useful. On the contrary, it just seems odd that Yaesu did not at least update the identification numbers. Anyway, they are the external VHF converter, the FRV-7700 which covers three bands, including the six, and two metre amateur bands, and the aircraft band. The FRV-7700 antenna tuner and the FRA-7700 active antenna.

I have not had the opportunity to try any of these so do not now comment on their performance.

Frequency selection via the keypad is a little unusual. Both the megahertz and kilohertz can be selected independently. As an example, press 21 and it will appear in the kilohertz section of the display, but pressing the orange megahertz button will move it to the megahertz section. The display and the receiver is now tuned to 21 MHz. It is easy once you get used to it! The same system works if a change of, say several hundred kHz is required.

All controls operate in a smooth manner, especially the main tuning control, which is a delight to use. The attenuator control is actually an IF gain which produces a smooth progressive action. The squelch will be most used with the VHF converter for FM reception and the tone control produced a progressive top-cut in the audio output quality.

I must say that I did enjoy using the VHF coverage. The sensitivity on the two metre band was quite comparable to most of the current transceivers for that band. Coverage also includes the aircraft band, so you can listen into the action for your local airport.

A dual width noise blanker is fitted. Unfortunately, the width selection switch is located on the rear panel, when there is plenty of room for its inclusion on the front panel between the NAR/WIDE and AGC switch. In spite of this, the blanker works quite well with the wide position being reasonably effective with the Woodpecker and troublesome power line noise. The narrow position is most effective against car ignition noise, although I find that car ignition is not the problem it used to be. Most cars seem to be very well suppressed these days.

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The least liked feature was the flip-down legs at the front of the receiver. They did not lift the front high enough and had an annoying tendency to flip-down unexpectedly! A chrome wire bale would be a big improvement.

FRG-8800 UNDER TEST

The following test equipment was used to produce our figures:
- A Marconi TF-995A/5 RF signal generator; AWA F-242A noise and distortion meter; and a Daven audio power output meter.
- Firstly, the audio power output of the receiver was checked with the following results:

<table>
<thead>
<tr>
<th>Ohm Load</th>
<th>8 Ohm</th>
<th>4 Ohm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>1.0 W</td>
<td>1.5 W</td>
</tr>
<tr>
<td>Distortion</td>
<td>6%</td>
<td>10%</td>
</tr>
</tbody>
</table>

These figures were taken in the SSB mode with a 1 kHz beat-note to also indicate the product detector distortion which is quite good. However, the maximum audio output is rather low.

Distortion in the AM mode was next measured and found to be four percent at 30 percent modulation with a 1 kHz tone. Distortion with FM mode selected and the generator set at 3 kHz deviation with a 1 kHz tone was measured at two percent.

With the audio gain control at zero, noise output from the receiver was measured at -60 dBm, a very creditable figure.

Next the audio response for AM reception was checked. This was measured in the normal AM mode with FM selected and the narrow SSB selectivity for AM reception.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>200</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>0</td>
<td>-7</td>
<td>-5</td>
<td>-2</td>
<td>-5</td>
<td>0</td>
</tr>
<tr>
<td>Response</td>
<td>1.5k 2k</td>
<td>2.5k 3k</td>
<td>4k</td>
<td>4.5k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>-1</td>
<td>-3</td>
<td>-7</td>
<td>-9</td>
<td>-11</td>
<td>-13 dB</td>
</tr>
</tbody>
</table>

This shows that the AM bandwidth is rather wide for serious shortwave DXing. Unfortunately, no optional high grade filters are offered as options.

The audio response was checked for SSB reception.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>200</th>
<th>500</th>
<th>1000</th>
<th>1.5k</th>
<th>2.5k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>0</td>
<td>-5</td>
<td>-5</td>
<td>-1</td>
<td>-4</td>
</tr>
<tr>
<td>Response</td>
<td>3k</td>
<td>3.5k</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>-8</td>
<td>-15 dB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This again shows that the selectivity is rather wide.

Sensitivity was checked in the SSB mode at several frequencies.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>14 MHz</th>
<th>146 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>1.0 V</td>
<td>1.0 V</td>
</tr>
<tr>
<td>S-meter reading</td>
<td>23 dB</td>
<td>25 dB</td>
</tr>
<tr>
<td>Signal generator output</td>
<td>4 dB</td>
<td>6 dB</td>
</tr>
</tbody>
</table>

The S-meter is also calibrated in the widely used SINPO scale of one to five. This is used by shortwave broadcast listeners.

INSTRUCTION BOOK

The owners manual for the receiver is excellent from the point-of-view for operating and setting up the equipment. However, it contains only limited technical information. There is no circuit diagram or even a block layout.

However, let us look at the positive side of the book. Control functions are covered in detail. There is a short discussion on suitable antennas for both HF and VHF reception, but unfortunately, only dipoles receive recommendation. Quads and Yagis are dismissed as being narrow band devices, although a log-periodic array is okay if you can afford one.

It is a pity that some wide band antennas are not described.

Several pages are devoted to the optional computer control of the receiver — it will be interesting to see how many listeners take advantage of this facility.

CONCLUSION

There is no doubt that this receiver is by far the best from the Yaesu factory so far. Perhaps the 12 memories are a little on the light side and certainly well down on the Icom 32 and Kenwood 100.

Selectivity is certainly on the wide side and it is unfortunate that better filters are not offered as options. (In the United Kingdom, upgraded receivers are offered at premium prices by Surry Electronics).

For all of that, the receiver is very easy to operate and, with the optional VHF converter, offers facilities not easily obtained in any other receiver.

If you are looking for a general coverage receiver for shortwave listening, or as an auxiliary set for the shack, the FRG-8800 would have to be seriously considered.

This review receiver was supplied by Dick Smith Electronics, to whom all inquiries should be directed.

The calibration of the LCD ‘S’ meter was checked at 14.200 MHz.

<table>
<thead>
<tr>
<th>S-meter reading</th>
<th>3.5</th>
<th>5</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal generator output</td>
<td>1.0 V</td>
<td>1.0 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distortion</td>
<td>4 dB</td>
<td>6 dB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The S-meter is also calibrated in the widely used SINPO scale of one to five. This is used by shortwave broadcast listeners.

AMATEUR OPERATOR’S HANDBOOK

It is planned to produce the new operator’s handbook in brochure format. The book will comprise three separate brochures — one covering Regulatory and Licensing Conditions; another on Syllabuses and Certificates, and the last on Procedures and Guidelines.

The Department of Communications aims to have the brochures available by the end of this year.

AMATEUR RADIO, November 1986 - Page 31
RADIO, November - AMATEUR 1986

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Daiwa PS 310M 31A (25A Cont.) PDA
Daiwa PS 120M 12A (10A Cont.) PDA

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SP-700 SWR/P 18 200 MHz PDA
SP-570 SWR/P 16 60 MHz PDA
SP-475 SWR/P 140 525 MHz PDA
SP-420 SWR/P 140 525 MHz PDA
SP-350 SWR/P 18 500 MHz PDA
SP-250 SWR/P 18 500 MHz PDA
SP-122 SWR/P 18 60 MHz PDA
SP-122 SWR/P 16 60 MHz PDA
SP-45M SWR/P 140-470 MHz PDA
CT-605 30/60/120/300 MHz "dummy loads" PDA
CT-700 30/60/120/300 MHz "dummy loads" PDA
CT-300 250 MHz Dummy Loads PDA
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• Simplified key board
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EMTRON’S fastest selling 300 watt an-
tenna tuner with SWR meter, built-in 1:4
balun, heavy duty ceramic switch and
top grade components. Works with all
rigs and is found in Amateur, Commer-
cial and Marine services.
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FOR SWL EMTRON DESIGNED ETP-1
Antenna Tuner & Low
Noise Amplifier For
Receivers!
ETP 1 will match your antenna to your receiver for
maximum signal from MW to SW. It utilizes a low
noise 12 dB gain pre-amplifier to boost weak signals.
Special spring loaded long wire terminals as well as
50239 connectors make ETP 1 the most versatile tun-
er/amplifier on the market.
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METER — EMTRON EP-1
Professionally made
NOISE BRIDGE for all
types of RF
measurements, antenna adjustments etc
$129

NEW from EMTRON EAA230 active antenna, an SWL delight
Specially designed for SWL. Based on the famous "DRESSLER DESIGN", the unique electronic
circuitry gives the receiver a perfect impedance match from 100 kHz to 30 MHz. A 12 dB low-noise
pre-amplifier gives weak signals a boost. Comes complete with 240V AC-12 V DC supply and 10m
of coax.
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3 STORE BUYING
POWER

NEW from EMTRON
The finest 300 watt antenna tuner on the
market with quality that only EMTRON can
provide! Unique features such as
• Cross needle SW12 forward & reverse power
meter
• Built-in 100 watt dummy load
• Antenna switch including bypass
• Built-in 1:4 balun for open feeding
• Lowest price & professional design
• Matches everything from 1.6 - 30 MHz
• Made in Australia by Emtron
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NEW QUALITY HF SWR
METER — EMTRON EP-1
Specially designed
with PRICE
QUALITY AND
ECONOMY IN MIND
Frequency range from 3-
50 MHz Reads
forward and reflected
relative power
Directly suited for
amateur and CB
services
$49

MAIL ORDERS
WELCOME!

AMATEUR RADIO, November 1986 - Page 33
It was thought that every amateur knew the regulations to our privileges of operating in the spectrum, particularly in regard of interference to other people’s communications or legitimate transmission in a shared segment of the amateur’s allocation.

Apparently, there is a rise in the incidence of deliberate interference to our fraternity and it is true that it is not a new infatiation by the experimenter, who would be reading these notes, that is responsible.

Fortunately, there are methods of tracking down such miscreants and it would be advisable to take note of times and dates in UTC, frequency and duration of the interference in the station log. Advise your nearest Department of Communications Office to drop a line to your State Intruder Watch Co-ordinator. Other amateur’s may also report the same incident, collaborating your observations, and giving the authorities something to go on.

If you have any suspicions as to who may be the offender, it would be wise to discuss it with the radio Inspectors, where it will handled in strict confidence allowing them to conduct an unhindered and, if necessary, an effective visit. Offences of this type, if successfully proved in a court, bring heavy penalties.

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**READERS**

Nearly everyone is interested in another operator's station. Are you? I would like to commence a series — My Station — with a photograph, complete with the operator of course, and a brief description of the equipment and the operator which will be produced as space permits. Can you participate? If so, please forward details to me via the address at the head of this column. All photographs will be returned after reproduction.

The management of GFS Electronic Imports, are kindly donating prizes for the best photograph and story printed during 1987 — so ladies and gentlemen, start writing. Black and white photographs are preferable, however sharp, clear colour ones are suitable.

**MAIL FROM LEBANON**

Difficulties for Lebanon, as it appears they have postal problems, and according to overseas publications, it is recommended that all mail be sent via Cyprus. It is then transferred from Cyprus by courier. At the time of writing these notes, Australia Post were not aware of any problems with letters through.

**MOUNT ATHOS AGAIN**

The Italian expedition was not permitted to proceed. After all, is it all in the best interests of the nobby?

**ZONES WORKED BY VK1WB as at 0100 May 31, 1986**

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<tr>
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<td>21</td>
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</table>

**INTERNATIONAL REPLY COUPONS**

International Reply Coupons (IRCs) are now 80 cents at Australian Post Offices, with a redeemable value of 55 cents for a stamp to another country. It really does pay to be a WIA member, as this is one of the advantages of saving money by going through your local bureau. If State bureaux can not send it via one, QSLs are via G4AYM, bureau (the cheapest route) or direct if you require a card.

**HAVE YOU HEARD OF IT?**

Itaparica Island, PT7/B/R/PY6, operated from this area recently. Believe it or not, my "modern" atlas does not list it, however an atlas bought at a "junk shop" for 20 cents many years ago lists it as near Brazil.

If not on your list, it may be well worth getting a QSL card as it is IOTA SA-02, for those interested in collecting islands for the IOTA Award.

**FAVIGNANA ISLAND**

Favignana Island is located in Italy. It is a very popular DXing destination and, in fact, it is one of the advantages of saving money by going through your local bureau. If State bureaux can not send it via one, QSLs are via G4AYM, bureau (the cheapest route) or direct if you require a card.

**SPECIAL PREFIX**

C92AJ, has been reported operating from this island using a 7J prefix, with the same QSL card as it is IOTA AF-19. This DXing tour is off to a flying start. To all the operators, we are looking forward to hearing you on the air.

**JAPAN**

KA2PF, is located in Tokyo. The KA2 prefix with two letter suffixes are issued to service personnel in Japan. The QSL address is W6CNA. This operator hopes to do a stint from Ogasawara later this year using a 7J prefix, with the same QSL information. We can only hope that he is successful.

---

**ondon is getting closer to our shores. I**

**Mozambique**

C92AJ, has been reported operating from this area. Permission to operate is dubious, so hold direct QSLs until further advice is received.

**Macquarie Island**

An excellent way of spending time on Macquarie Island, a much sought after DX Country and one of the outposts of Australia's sub-Antarctic, has been adapted from an article by one who has spent time on the Island, Peter Arden, a Meteorological Observer.

One form of entertainment is to participate in field trips using the numerous field huts located around the island's coast.

The island is 37 kilometres long and about five kilometres wide. It is one of the most remote places in the world. Paths can take all of 10 days to visit all the huts in one attempt. Most of the island is a 300 metre high plateau with steep cliffs down to the coast.

The plateau is exposed to the worst of the weather but the walking is quite easy as trails are well marked and easy to follow.
There are no "mod cons" (toilets), so in the interest of environmental concern, one must go down to the beach below the high-water mark and keep a look out for a big wave. After some trial and error one becomes quite skilled at this operation even in force eight winds.

A shower consists of a bath-bird outside. The weather is not always bad and there is plenty of opportunity to leave the huts and explore the plateau, cliffs, waterfalls, vast slopes and gorges, or photograph the penguins, seals, albatrosses and other wildlife that are abundant on the island.

Hiking around Macquarie Island and relaxing in the huts is an enjoyable and interesting experience.

Well Peter, I am afraid I would rather walk to the local shops and take my chances of being hit by a "billy-cart", bike or car, and suffer the pollution on a sunny day ... but on the other hand, I do not have much exercise ... .

A number of amateurs have visited Macquarie, two in particular come to mind, the first being Dave Shaw VK3DHF ex-VK92D and VKOHl, of Heard Island fame (who used to enjoy the walking trips), and Denise Allen VK9YL, the first lady amateur licence holder on Macquarie Island. Denise enjoyed the area so much that she returned to a colder Antarctic base for a further stint within weeks of returning to Melbourne.

The following table shows the weather for July on the Antarctic-bases and it certainly makes one feel more comfortable about the winter we endured in Melbourne this year, although it was not quite as bad as Canberra, which had 8 degrees Celsius one morning. (Probably the morning the Budget was handed down).

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<td>Temperature</td>
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<td>-12</td>
<td>-12</td>
</tr>
<tr>
<td>Temperature</td>
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</tr>
<tr>
<td>Mean daily sunshine</td>
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<tr>
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<td>3.2</td>
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<td>3.8</td>
</tr>
<tr>
<td>Mean wind gust</td>
<td>13.2</td>
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<td>13.8</td>
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<tr>
<td>Maximum wind gust</td>
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<td>25</td>
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<tr>
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</tbody>
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Well, we thought the southern states were cold, and the northern states will be shocked at these figures, however I know where I would prefer to be — by a cosy fire.

RECOVERY
It is reported that young Eric L30042, is slowly recovering and it will not be too long before he is back monitoring the bands. Good luck Eric and speed that recovery along!

MARION ISLAND
A note from Percy VK9PA, gives an insight to the much wanted DX bands, Marion Island and the companion island, Prince Edward, both of which are under South African control.

Another hazard is the penguin rookeries. To find the route blocked by half a million irate, noisy penguins can be awesome. The environmental way to avoid the rookery is to walk through the surf, but the more practical and popular way is to walk slowly through the penguins and take what comes — sometimes displeasing!

Whatever one wanders on the island the weather is frequently windy with rain, drizzle, snow hail or mist — a very wet bog, which is unpleasant and a field hut is always a welcome sight after a long walk.

The next hazard that can be encountered is a long stretch of feather tied — a very wet bog, with temperatures like that — by a cosy fire.

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Some of the large Penguins one encounters on a walking trip around the Island.

Photograph courtesy Dave Shaw VK3DHF

One of the Field Huts that border the coastline. Note the visitors at the front door.

Photograph courtesy Dave Shaw VK3DHF

The coast has a number of hazards for the walker. One of them is the one metre tall tussock grass with deep seal wallows between. Most of the tussocks are fairly stable and jumping from one tussock to the next is relatively simple. Occasionally, the odd tussock is unstable and tends to collapse tipping the walker waist-deep into a foul smelling, brownish-green slime. This eventually happens to everyone making the trip around the island.

Elephant seals are everywhere and block the only route. Attempting to move them only makes them more aggressive.

SOME OF THE LARGE PENGUINS ONE ENCOUNTERS ON A WALKING TRIP AROUND THE ISLAND.

PHOTOGRAPH COURTESY DAVE SHAW VK3DHF

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cards, are doing their utmost to stamp out such practices. It will be interesting to see what John W4FRU, comes up with after consultation with his committee and whether the ARRL will adopt the recommendations. It is hoped that all concerned take every aspect of the implications that could occur with even minor mistakes being personal, it is felt that the items such as the admittance of the Pribiloffs, 4U1VIC and a temporary deletion of 15 are far more important at this juncture.

FO0XX CARDS
The latest word is that they have been received from the printers but will not be mailed until all are filled out. Do not blame the mail service but wait patiently until they arrive, hopefully as a Christmas present.

PLAN AHEAD
The 1987 International DX Convention, sponsored by the Northern California DX Club, will be held at the Grosvener Hotel in Visalia, on April 3 to 5, next year

Further details may be obtained from the Publicity Officers, Jan and Jay O'Brien, the folk with the massive aerial (refer How's DX September AR), PO Box 700, Rio Linda, CA 95673-0700, USA.

JARL
A number of well known Japanese DX enthusiasts are trying to activate a number of rare countries under the JARL banner, to coincide with the JARL's 60th Anniversary.

LUXEMBOURG
A number of PA stations and one G-licensuree were due to activate LX last month. All QSLs to PO Box 356, Dordrecht, Holland, or as instructed by the operator.

FRENCH BUREAU
A number of sources indicate that the French QSL Bureau is in a state of chaos during the move from Paris to Toulouse in March. Be prepared for a long wait or reluctantly spend a couple of dB and send direct.

FOUND
Through the help of OR7 DX and a couple of diligent sleuths, Bob VO9BB has been located. He has the logs and cards and his QTH is PO Box 3152, Spartanburg, SC, 29304, USA.

CORAL
The Radio Club of French Polynesia (CORA), was trying to sponsor a DXpedition to the Marquesas. The call will be FO0BA and operators so far include FO8JP (an experienced CW operator) and FO8LR Timing is unknown.

BITS AND PIECES
TY9ER was a pirate, so save the paper-work. TY1ER could be the same operator! Work first — worry later. ** ZD8BV will be QRV from Gough Island in December and reverts back to his normal call, VK7JS in Tasmania. TL6BA is quite active, and if lucky QSL via SM2NDO. ** Andorra was activated on both CW and SSB in September.

If lucky, and you did not catch the QSL addresses, they are C30AN to DLBOH, C30DAJ and C30AK. ON4TU. ** Still on Andorra, the C30BBP, C30BBX and C30CY operation was around 10000 contacts. QSL to PA38MJ direct or economically through your bureau. ** Dale VO4OM is putting up a 160 metre antenna. Band enthusiasts look for him at anytime when conditions are favourable to Diego Garcia. ** The Australian Commonwealth Meteorological Bureau is expanding its participation with Australia's satellite AUSSAT. ** Another station active from Franz Josef Land is UA1OH. This is a backup for UV3 and FO8BS. ** DJ3SI has been active as Z25EUX. ** Don V3CH has a new call sign, V31PC. QSL to PO Box 7, Punta Gorda, Belize. ** Bjarne JW6FG is not a member of the local radio society, therefore QSL to Bjarnes Bear Island, N-9176 via Norway. There is a weekly helicopter service to the island, weather permitting. ** 9X5WP went QRT on August 10. His wife Mary W1FM are active on 14.218 MHz about 0400UTC daily. ** Any ZA expedition has apparently died a natural death — unfortunately. One day it will appear, but everyone is asking when? ** Bouvet Island may appear this year or early next year for a very short duration, weather conditions being favourable! ** Don Search the person in charge of the ARRL DXCC Desk assistant has been upgraded, so Don is, after catching up with the backlog, looking for another contender for the position. ** GB8RC was used to coincide with the Scottish Amateur Convention.

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ANTIQUE QSL CARD
Courtsey Peter Wolfenden VK3KAU

Telecommunications in Nepal QSLs quite promptly. ** Ascension Island only to a list! I do not believe it, but they are active as ZD8DP and ZD8SW. Stuart ZD8SW is working at the BBC relay station on a two year assignment. Their favourite frequency is 14.218 MHz. ** A22DP is quite active for those that need this country.

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Just what you want...

The best value in Amateur Radio around!

Latest range of Yagi Antennas from RF Aerospace

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<tr>
<th>Antenna Type</th>
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</tbody>
</table>

2-in-1 value! 2m and 70cm...

FT-2700R

Here’s the unit every amateur would want! Switchable 2m and 70cm bands for a wide range of applications. And because it's affordable, compact unit offers all the famous YAESU features: * 10 Channel memory * Memory and priority scan * Duplex crossbanding * Switchable 25W/3W power output. Cat D-3515

**VALUE!**

**ONLY $1199**

Your passport to UHF/VHF listening...

YAESU’s brilliant FRG-9600 scanning receiver for full 60-905MHz action over the VHF/UHF bands... hear FM, AM, CW and SSB* for listening excitement! Keypad or rotary frequency selection — with busy, clear and memory scanning — puts you in the action sooner. And the CAT (Computer Aided Transceiver) interface doubles performance with multiple memory banks, automatic tuning plus customised scanning and searching. Cat D-2825

**FT-2700R**

Here’s the unit every amateur would want! Switchover 2m and 70cm bands (or a wide range of amateur action. And this affordable, compact unit offers all the famous YAESU features: * 10 Channel memory * Memory and priority scan * Duplex crossbanding * Switchable 25W/3W power output. Cat D-3515

**WOW! $1199**

The All Mode Receiver

YAESU’S FRG-8800

You won’t find a better unit for the price! All the most wanted features are included PLUS some pleasant surprises: * 10 in-built memories * Digital frequency entry or standard knob tuning * Provision for an internal VHF converter * CAT (Computer Aided Transceiver) capability. Two exciting models to choose from:

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRG-8800 HF (150kHz-30MHz)</td>
<td>$1259</td>
</tr>
<tr>
<td>FRG-8800 SW (2MHz-30MHz)</td>
<td>$969</td>
</tr>
</tbody>
</table>

Verticals Tool!

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2m: Cat D-4703</td>
<td>$59.95</td>
</tr>
<tr>
<td>70cm: Cat D-4704</td>
<td>$59.95</td>
</tr>
</tbody>
</table>

Improve 2m Performance!

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-4700</td>
<td>$199</td>
</tr>
<tr>
<td>D-4701</td>
<td>$249</td>
</tr>
</tbody>
</table>

Limited Offer! Bargain 70cm Hand Helds

NOW $399

With Double Bonus to the value of $79.90!

It’s a bargain so hurry while our limited stocks of the superb YAESU FT-703R last! It’s ideal for field or mobile action.

- Covers 430-440MHz
- Squelch
- Switchable hi/lo power
- Standard repeater offset switch
- VOX with optional headset
- S/PO meter
- Includes FNB-3 NICD battery

**Bonus #1:** YH-2 Headset (C-4200) value $49.95.

**Bonus #2:** 70cm Yagi Antenna Kit (K-6305) value $29.95.

That’s $79.90 value — yours absolutely FREE! Cat D-3508

...And for 2m action our latest economy Hand-Held

Amazing value for access to the full 800 channels in the 144-148MHz band. And for the low price you enjoy exceptional features: * Repeater splits * Easy thumbwheel tuning * Built-in condenser mic * RF output 1.5W * Sensitivity: 0.5uV (20dB S/N).

Now $69

**VALUE!**

**ONLY $299**
VHF UHF — an expanding world

All times are Universal Co-ordinated Time and indicated as UTC.

AMATEUR BANDS BEACONS

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>CALL SIGN</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>432.150</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
<tr>
<td>432.160</td>
<td>VK6RPR</td>
<td>Perth</td>
</tr>
<tr>
<td>432.535</td>
<td>VK3RMB</td>
<td>Mount Gambier</td>
</tr>
<tr>
<td>432.540</td>
<td>VK4RAR</td>
<td>Albany</td>
</tr>
<tr>
<td>432.545</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
<tr>
<td>432.550</td>
<td>VK3RTG</td>
<td>Karratha</td>
</tr>
<tr>
<td>432.560</td>
<td>VK3RMB</td>
<td>Mount Gambier</td>
</tr>
<tr>
<td>432.565</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
<tr>
<td>432.570</td>
<td>VK2RSY</td>
<td>Melbourne</td>
</tr>
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<td>432.580</td>
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<td>432.585</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
<tr>
<td>432.590</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
<tr>
<td>432.600</td>
<td>VK2RSY</td>
<td>Sydney</td>
</tr>
</tbody>
</table>

1. Ian VK3AQH, has written with more details of his beacon. The call sign has been corrected to VK3RAI. It is located at Macleod, a north-eastern Melbourne suburb, and has a power output of two watts (the licence allows for a maximum of seven watts). The antenna is a clover leaf and the mode, CW, with one minute of carrier followed by the call sign.

Ian would be interested to receive reports from those hearing the beacon, which would help determine its coverage. Reports to Ian Glanville, Box 203, Lewisham, Vic. 3147, or he can be contacted at 3.650 MHz, Sunday mornings at 0000 UTC.

SOLAR FLARE

A letter from Chas VK3BRZ, sheds some more light on the huge solar flare last February, which resulted in many long distance contacts. Chas writes:

"Much has been written in the various radio journals, both local and foreign, concerning the solar flare of February 8, this year, and its effects on radio propagation. One aspect of this event which has been neglected: I refer to the high level of solar noise in the few days leading up to the flare.

On the evening of Wednesday, February 5, and February 6, VK3AQH had the high level of solar noise he was hearing on two metres. Sure enough, when I pointed my beam to the sun, the noise was very strong indeed. In turn, I called Daryt VK3AQH, and Bert VK3ZXX, who both observed the noise on two metres and six metres. Daryt also confirmed its existence on 70 cm. We all agreed that the level was around 57. This was about 7 days before the usual dayside saving time (1800 UTC). We continued to listen until, near sunset, the noise began to fade and peak with a period of 10 or more seconds (unfortunately, I paid little attention to the remainder of the flare, and gradually disappeared when the sun was below the horizon.

"In the ensuing days, I made a special point of monitoring the band, with a solid state receiver, the noise being audible at both times of the day, but becoming progressively weaker. By the evening of the seventh, the noise level had almost returned to the 'normal' level. (A monthly report on the IC-551.

"I should point out that I had previously encountered this phenomenon. Solar noise I could hear quite often but had never experienced above the receiver noise floor. (5840 with VK5 preamplifier, antenna 20 element, four bay collinear array). While I realise the sun was unusual activity, I did not, at this time, associate this activity with a solar event.

I did feel, however, that changes would occur in radio propagation and noted that HF activity was high.

"I would also like to know if others observed this phenomenon (and perhaps did not recognize it at the time). In hindsight, it appears the enhanced VHF conditions might well have been predictable several days before the flare. Could some data be collected on how the date of the flare is actually determined? That is, at what stage is this kind of disturbance actually classed as a flare?"

"I also feel, however, that changes would occur in radio propagation and noted that HF activity was high.

Thank you for writing Chas, and I hope your comments will keep the flames of interest kindled!"

IC-551 NOISE BLANKER

The information I gave, in the September issue, of modifications to the noise blanker of the IC-551 obviously was gratefully received by a number of operators who have been plagued by power line noise in view of communications since received.

One such communication came from David VK3AOI, which added general information such that once "the final results would be similar to that already being obtained with the TS-600 noise blanker. The additional information is included for those wanting to achieve the ultimate in noise reduction and with the noise blanker activated until a minimal S-meter reading is obtained, note the reading; and e. Proceed to modify Q13 and R86 as described in the September 1986 AR. Conduct set up and realignment procedure as indicated in sub-paragraph c.

The figures listed below are indicative of the performance obtained (using drill as noise source):

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Noise Blanker On</th>
<th>Noise Blanker Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.200 MHz</td>
<td>S3-6</td>
<td>S7-8</td>
</tr>
<tr>
<td>5.250 MHz</td>
<td>S3-6</td>
<td>S7-8</td>
</tr>
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<td>S3-6</td>
<td>S7-8</td>
</tr>
<tr>
<td>5.350 MHz</td>
<td>S3-6</td>
<td>S7-8</td>
</tr>
<tr>
<td>5.400 MHz</td>
<td>S3-6</td>
<td>S7-8</td>
</tr>
</tbody>
</table>

PS. The figures are indicative of the performance obtained using drill as noise source.

"d. Carefully align L19 and adjust R65 a number of times with the noise blanker activated until a minimal S-meter reading is obtained, note the reading; and e. Proceed to modify Q13 and R86 as described in the September 1986 AR. Conduct set up and realignment procedure as indicated in sub-paragraph c.

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Thank you for the letter David, and the extra information given to ensure a worthwhile improvement in the noise problems of the IC-551. I shall try your noise source to fine-tune my IC-551 and hopefully this summer I will not need to replace the IC-551 with the TS-600 again — at least both rigs should be on a par.

All of this, of course, makes one wonder why one manufacturer can produce such a superb noise blanker for six metres while another, with an equally good reputation for producing fine equipment, should install such a mediocre device! Even my old FT-101B has a superb noise blanker for use on power leak and with modern techniques, no quality rig should have to be put aside through inadequate equipment. I hope someday we will see these comments and do something about it.

OVERSEAS

CO ham radio from Japan for August 1986 (via VK3AQU and another, the power leak was reading S8+9 +10 dB with the noise blanker switched off. With the noise blanker activated, the S-meter reading was 0. Peace and quiet, I long for these days again.

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The Japanese VHF Operators have been having a lean time like we in Australia when it comes to exciting events. However, Chas VK3BMP and BY4RB and having a first contact on June 22, with JA6YMR. Later contacts were made to all JA call areas. Time was around 1530. Equipment used was a TS-100 to a six element beam on an 8 metre boom and seven metres high. QSL to Box 413, Zhenjiang, China. Other stations from the same country include BY4AA, and BY1PK with operation usually around 50.110 MHz and often CW.

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53.750 MHz, and another commercial signing JKH appears on 50.180 MHz.

One supposes that being relatively close to other stations, both within the continental United States, and in the immediate vicinity may be a contributing factor. However, the station has also been active during brief periods of high sunspot activity, and it would appear that at times the band was not only available, but also difficult to operate on. The station is often heard during conditions favorable for long-distance contacts, and at times, it has been possible to make contact with distant stations.

In the main, six metre contacts via Sporadic E or Es for short, occur during the summer months, especially for 70 cm. If enough were to go out it seems worthwhile to pack up the station and go somewhere where you can get away from the routine and enjoy some of the benefits from having a portable last year from Meningie, when conditions were right. The period from 26/12/86 to 1/1/87 being one week, lends itself to fill the gaps from the west, and the Pacific, and the call channel gives him the only chance at a contact as moving may put him under the water. I hope newcomers will not fall into this trap of being 100% airtight. Cw will only occasionally be found on the band, mostly at the lower end, but is still very useful.

THE ROSS HULL CONTEST

That perennial, the Ross Hull Memorial Contest comes up again in this column as I said it would in the Contest rules for this contest. I have given you news about the latest portion of the sunspot cycle. A number of people have been very faithful in following me up, but I would be pleased to hear from any VHF type who would like to pass on something about himself, the goals he has achieved including how he first became interested in VHF, and most importantly, the submission of a log. If you do your original neatly in black pencil (this allows the use of a rubber for corrections) you can photocopy your log without the necessity of rewriting it. I have followed that method for a number of years and it works quite well. The log should bePhotocopy your log without the necessity of rewriting it. I have followed that method for a number of years and it works quite well. The log should be signed by the operator and/or antenna installation, etc.

Additionally, I would like to hear from more of you in regard to who you are working as it is proving increasingly hard to give you news about himself, the goals he has achieved including how he first became interested in VHF, and most importantly, the submission of a log. If you do your original neatly in black pencil (this allows the use of a rubber for corrections) you can photocopy your log without the necessity of rewriting it. I have followed that method for a number of years and it works quite well. But the log should be signed by the operator and/or antenna installation, etc.

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Contests

CONTEST CALENDAR

NOVEMBER
1-2 International Police Association Contest (Details this issue)
8 Australian Ladies Amateur Radio Association Contest (Rules September issue)
8-9 European RTTY Contest (Rules August issue)
15-16 HARS National CW Sprint (Rules October issue)
15-16 Oceania QRP CW Contest
15-16 HARS National Phone Sprint (Rules October issue)
29-30 CO WW DX CW Contest (Rules this issue)

DECEMBER
6-8 ARRL 160 metre Contest
11-13 ARRL 10 metre Contest
13 Ross Hull Memorial VHF Contest

JANUARY
5 Ross Hull Memorial VHF Contest

I would also expect that during January, 73 Magazine will run their usual series of World SSB Championship Contests. To date, I have not received any details for these contests. Should you be interested in them, I suggest that the rules published in Amateur Radio magazine for December 1985 may be worth your perusal. In the meantime, should I receive details I will publish them as quickly as possible.

It is unfortunate that now and again, copies of rules do not come to hand as early as one would like and thus I have such a situation this month. I was unable to publish those VHF operators out of DX Phone Contest prior to this issue. I publish them now to cover the CW event which is held at the end of this month. The rules for the CW World Championship vary little from year to year. Therefore I trust that the publication of this information will be of value to you in the future.

CONTEST CHAMPIONSHIP TROPHY

I have a correction to make to the results of the CW category for the Contest Championship Trophy for 1985, the results listed in the September issue of Amateur Radio, it showed that Jim VK2BQS, was the winner of this section. Now, I can tell you that Jim is certainly a very honest man and I am proud to claim Jim as a friend in amateur radio.

Following a telephone call, plus other correspondence from Jim, it has been decided that the winner of this part of the competition will now be declared as being Lindsay VK5GZ. Jim VK2BQS, drew my attention to certain facts which precluded him from rightfully being declared the CW section winner.

Lindsay VK5GZ, is certainly a worthy winner of the competition as he has over the years supported the various contests organised by the WIA. He is also a keen CW operator and has certainly done his very best to popularise that mode of transmission. He has always shown his keen interest in Institute matters and has made many submissions to the VK9 Division on both Divisional matters and suggestions for Federal Agenda items. Our heartiest congratulations to you, Lindsay.

ROSS HULL MEMORIAL VHF CONTEST

The last two years operation in this contest has seen a great deal of interest in the VK3 Division of entries. Efforts have been made to try and increase interest, but to this stage, to no avail. For yet a third year the rules have again been altered to try and encourage more operators to participate. I have already expressed my firm opinion that if this coming contest does not show an improvement in entries there will have to be a long hard look at the future of the Ross Hull Contest and its present format. It appears that there is perhaps hardly any interest at all. Quite some time ago now, I circulated a copy of a discussion paper regarding VHF/UHF aspects of contests. To date (end of September) little comment has been forthcoming. Maybe nobody really wants any VHF contests at all.

There has been some suggestion that this FCM actually wants to do away with the Ross Hull Contest and has only stood on my record in that I have done as much as anyone to try and breathe some real life back into the VHF contest scene. In fact, I rather feel that for the interest shown, I have put more effort into trying to maintain this contest than has ever been put into discussion on HF contests. No! I am neither against nor unskilled in the matter of VHF and higher frequencies. I do in fact, quite often work at frequencies up to around 25 GHz. For the uninitiated that is 25 000 MHz. This I do in my professional work on a daily basis. So, I hope that those few statements may do just a little to refute the odd rumour or misunderstanding which may exist. I will however still maintain that the only measure that the FCM has of the success and interest in the Ross Hull Contest is by the number of entries submitted for the contest.

I now provide you for the rules for the 1986 Ross Hull Memorial VHF Contest, together with various comments dealing with the changes made.

Objects — Australian amateurs will endeavour to contact as many other amateurs as possible.
Exchange — QSO plus three figure serial number beginning at 001 and increasing by one for each contact. When 999 is reached, a start is made again from 001.

Bands
— 52 MHz: up to 1000 km, two points; 1000 to 2000 km, five points; over 2000 km, 10 points.
— 144 MHz: up to 500 km, two points; 500 to 1000 km, five points; over 1000 km, 10 points.
— 432 MHz: up to 500 km, four points; 500 to 1000 km, 10 points; over 1000 km, 15 points.

These scores are for Australian amateurs contacting one another on the Australian mainland and few states.

Bonus — For every completed 10 contacts entered in the log book each UTC day, add a bonus of 10 points to the day’s score.

Scoring — 52 MHz: up to 1000 km, two points; 1000 to 2000, one point; over 2000 km two points.
— 144 MHz: up to 500 km, two points; 500 to 1000 km, five points; over 1000 km, 10 points.
— 432 MHz: up to 500 km, four points; 500 to 1000 km, 10 points; over 1000 km, 15 points.

Comments on the Rule Changes for the 1986 Ross Hull Memorial VHF Contest

1 There seems little doubt one of the main inhibiting factors for the submission of logs is the fact that there are quite a number of very active amateurs able to operate on six or more bands. Those without this facility feel it is a waste of time sending in logs to a contest in which they are unable to obtain a suitable certificate. The entrant with the highest scoring contacts may be logged with no limit to the number of times that one station can be logged.

Disqualification — The Contest Manager may disqualify logs which are illegible or improperly set out. Both stations participating in the contest are heard, both may be claimed, but must be listed as separate entries on the log. Any scoring contacts may be logged with no limit to the number of times that one station can be logged.

Ross Hull Memorial UHF Contest — As the bands 576 MHz and above have been removed from the 1986 contest, it may be desirable to hold a contest along similar lines as the VHF contest for the UHF region.

The FCM would appreciate feedback from those amateurs who operate on the UHF bands with a view to possibly arranging such a contest to run in parallel with the VHF contest. If sufficient interest is indicated, it should be possible to obtain a suitable trophy for annual competition.

Declaration — I certify that I have operated in accordance with the rules and spirit of the contest.

Name, address, signature and date.

Awards — A perpetual trophy is awarded annually for competition between members of the Wireless Institute. The name is inscribed on the trophy and the winner receives a suitable certificate. The entrant with the highest overall score in the seven day section will be the winner and their Division will hold the trophy for one year.

Certificates will be awarded to the highest scorer in each State for the seven day period and to the highest scorer in each division for the two day sections (one certificate only). No entrant may receive more than one certificate.

Submission of Logs — Entries are to be forwarded to the Federal Contest Manager, WIA GPO Box 1234, Adelaide, SA. 5001. Entries must be received no later than Friday, February 6, 1987. Please endorse the outside of the envelope with the word Amateur Radio.

Receiving Section — Logs for the receiving section must show the same information as for a transmitting log, except for the second number exchange. If both stations participating in the contest are heard, both may be claimed, but must be listed as separate entries on the log. Any scoring contacts may be logged with no limit to the number of times that one station can be logged.

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Australia who are prepared to issue numbers in the contest and given such contacts a reasonable points score.

3. The bonus system of 1985 made it more worthwhile for the minority of operators to work contacts with stations already on the bands in areas which may have already been worked. By giving a bonus after 10 contacts will ensure there is a more active working in areas under stations as possible.

4. A number of operators wanted no contacts under either 50 or 100 km, depending on their altitude. While this may be thought, it is not fair in a case where there may be a station say 60 km out of a city metropolitan area who is able to work all and sundry living in the city. Therefore, the rule to only have one contact, whereas, If they can work at any distance, they do have the right to work across town and thus be on a more even footing.

5. Doubts were raised as to the need for the contest scoring to be taken over the whole three weeks. An operator is only able to spend with whatever time he has available on the contest, if it be those weeks that is fine, but it may only be 15 days, etc. But if he takes the best seven days then he may stand as good a chance as the one taking the whole three weeks. Therefore the high scores he is receiving from the long time operator will not mean he will have no chance of winning as it did when it related to the full period. Even week by week he might have more chances than one with less operating time, if both are in fact working the bands on what could be said to be good days, then both have an equal chance of making the best scores.

6. Certificates: For the 1985 contest, a total of nine certificates were issued on the basis of a total number of 11 entries. (Only 11 entries for the whole of Australia in a National contest?). To my mind this approach seems to detract to a much greater degree from the value of a certificate. We will however, persist again this year with the approach shown above in the hope that more entries may be forthcoming. Perhaps long, but surely useful, is to understand further some of my earlier comments regarding lack of interest.

INTERNATIONAL POLICE ASSOCIATION CONTEST

This contest is run on two consecutive days as CW: Saturday, November 1. SSB: Sunday, November 2. 0600-1000 UTC and 1400-1800 UTC.

The International Police Association Radio Club Contest is again organised by the German Chapter. Participation is by members and non-members in three classes: single operator, multi-operator and SWL. The majority isolated station.

The rules for the 1987 Remembrance Day Contest shall remain as they were for 1986. I would also like to think that to a greater degree, the rules for all of our WIA sponsored HF contests will, by now, have been thought through and into the preparation of their entries. It is also apparent that some do not bother at all. I cannot understand why these few do not recognise the value of their certificate in completely separate categories in the rules and thus, it would be expected that separate logs should be submitted for each category. Likewise, that each operator will see the need to again separate logs are necessary. This also extends to the Front Sheet which is required. Life would be so much easier for a Contest Manager if the majority of operators would think just a little more about how the rules are worded. Just an extra three minutes spent on each of 10 logs sorting, checking and collating the logs which are received with logs, it appears that this contest and given such contacts a reasonable points score.

At present, I am extremely busy keeping up with the large volume of incoming logs and material. At this stage, I would like to make several comments. It is apparent that the majority of operators would think just a little more about how the rules are worded. Just an extra three minutes spent on each of 10 logs sorting, checking and collating the logs which are received with logs, it appears that this contest and given such contacts a reasonable points score.

REMEMBERANCE DAY CONTEST

At present, I am extremely busy keeping up with the large volume of incoming logs and material. At this stage, I would like to make several comments. It is apparent that the majority of operators would think just a little more about how the rules are worded. Just an extra three minutes spent on each of 10 logs sorting, checking and collating the logs which are received with logs, it appears that this contest and given such contacts a reasonable points score.

So, for now, I again wish you all the best in your activities.

—73 de Ian VK5SOX.

1986 CQ WORLD-WIDE DX CONTEST

Phone was on October 25-26.

CW: November 29-30.

Begin 0900 UTC Saturday . . . Concludes 1400 UTC Sunday.

Objective: For amateurs around the world to contact other amateurs in as many zones and countries as possible.

Band/Mode: 1.8 to 28 MHz, except for WARC bands.

Types of Competition —

1. Single Operator (single band and all). Single operator stations are those at which one person performs all of the operating, logging, and spotting functions. The use of DX spotting nets or any other form of DX alerting is not allowed. Logs in violation of the 10-minute rule will be automatically reclassified as multi-multi to reflect their actual status.

2. Multi-Operator (all band operation only).
   a. Single transmitter, only one transmitter and only one band permitted during the same time period (defined as 10 minutes). Exception: One and only one other band may be used during the same period if — and only if — the station is required to do so by the local Contest Manager. Logs in violation of the 10-minute rule will be automatically reclassified as multi-multi to reflect their actual status.
   b. Multi-Transmitter (no limit to transmitters but only one signal per band permitted).

3. QRP (single operator only). Power must not exceed five watts output. Stations in this category will be competing only with other QRP stations for awards.

4. Team Contest. A team consists of any five amateur stations in the single operator category. A person can be on only one team per mode. A team must operate from two continents. Competing on a team will not count as more than one entry from any of the participants. An entry from any individual in their personal score for a radio club. A team score will be the sum of all the team member scores. SSB and CW teams are totally separate. That is, a member of an SSB team can be on a totally different CW team. A list of a team's member scores must be received by November 15 for CW. Send a list to

Number Exchange — RS/T report, plus 001.

In the contest log deadlines.

Number Exchange — RS/T report, plus 001.

In the contest log deadlines.

Points —

1. Contacts between stations on different continents are worth three points.
   2. Contacts between stations on the same continent but different countries are worth two points.
   3. Contacts between stations in the same country are permitted for zone or country multiplier credit but have zero point value.

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Example: 1000 QSO points times 100 multipliers (30 Zones plus 70 Countries) equals 100,000 (final score).

Awards — First-place certificates will be awarded in each category listed under Type of Competition, in every participating country and each call area (for example, United States, Canada, Asiatic USSR and Japan).

All scores will be published. To be eligible for an award, a Single Operator station must show a minimum of 12 hours operation. Multi-operator stations must operate a minimum of 24 hours. A single-band log is eligible for a single-band award only. If a log contains more than one band it will be judged as an all-band entry, unless specified otherwise.

In countries or sections where the returns justify, second and third place awards will be made. All certificates and plaques will be issued to the licensees of the station used.

Trophy winners may win the same trophy only once in a two-year period. In the event that the same station wins the World Award in the same category in two consecutive years, a special CO Magazine Championship plaque will be awarded the second-place contest winner. The sponsored trophy in that category will then be awarded to the second-place contestant in that category, if the returns justify the award.

Advances or improvements in the construction of the equipment will be considered for a sub-area award. That trophy will be awarded to the runner-up of that area.

Club Competition —
1. The club must be a local group and not a national organisation.
2. Participation is limited to members operating within a local geographic area defined as within a 275 km radius from the centre of the club area (except for DXpeditions especially organised for operation in the contest).
3. To be listed, a minimum of three logs must be received from a club and an officer of the club must submit a list of participating members and their scores.
4. Logs must be checked for duplicate contacts, correct QSO points and multipliers. Submitted logs must have duplicate contacts clearly shown. The original log must be requested by the Contest Committee if further cross-checking of the log is necessary.
5. Use a separate sheet for each band.
6. Each entry must be accompanied by a summary sheet showing all scoring information, category of competition, contestant's name and address in BLOCK LETTERS and a signed declaration that all contest regulations have been observed.
7. Sample log and summary sheets and zone maps are available from CO. A large self-addressed envelope with sufficient return postage or IRCs must accompany your request.
8. If original forms are not available, make up your own, 80 contacts to a page on 215 x 279 mm paper.
9. All entrants are required to submit cross-check sheets for each band on which 200 or more QSOs were made. All other entrants are encouraged to submit cross-check sheets.
10. Duplicate contact penalty: up to one percent — three additional contacts removed; one to three percent — 10 additional contacts removed; over three percent is grounds for possible disqualification.
11. QRP stations must indicate same on their logs.

Disqualification — Violation of amateur radio regulations in the country of the contestant, or the rules of the contest; unsportsmanlike conduct; taking credit for excessive duplicate contacts; unverifiable QSOs; or unverifiable multipliers will be deemed sufficient cause for disqualification. (Incorrectly logged calls will be counted as unverifiable contacts.)

An entrant whose log is deemed by the Contest Committee to contain a large number of discrepancies may be disqualified from eligibility for an award, both as a participant operator or club, for one year. If an operator is disqualified a second time within five years, he will be ineligible for any CO contest awards for three years.

Actions and decisions of the CO Contest Committee are official and final.

Logs must be postmarked no later than December 1, 1986 for the Phone section and January 15, 1987 for the CW section. An extension may be given if requested. Indicate this on the envelope.

Logs to be Forwarded to — CO Magazine, 76 North Broadway, Hicksville, NY 11801.

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**QRP NOTEBOOK**

By Doug DeMaw W1FB & published by the ARRL

Doug DeMaw was formerly a technical editor of QST and a co-author of one of the best books ever written for the radio amateur.

QRP Notebook, as the author noted in his preface, follows his preferred style of writing; plain language. However, his reluctance to use photographs and "fancy diagrams" is lamented by at least one reader. This book has chapters devoted to receiving, transmission, transceivers, accessory gear and a workshop.

In navigating between simplicity and complexity, the author has missed the mark. Whilst the description of the theory behind the practical work is simple, the information required for construction is insufficient. Conversely, the level of theory does not match the constructional ability expected. No PCB designs are included, indeed the author expects the reader to construct the various projects from schematic diagrams. These PCB layouts, for most constructors, are essential and it is hoped that these are not considered "the author's pet projects".

For a beginner, and I showed it to others, the book was confusing. The greatest complaint was the lack of photographs. All wanted to see the completed article; a picture of what is being aimed at!

The author has attempted to economise in order to produce the book. I see it as a book that was produced to suit a budget instead of satisfying a need.

His previous effort is still highly recommended.


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**MORSE CODE: The Essential Language**

By Peter Carron Jr, W3DKV & published by the ARRL

Morse code, by its nature, does not lend itself to description in a book. It is something that most people can only appreciate from experience.

This book only reinforces this belief; I love Morse code, but I do not like the book! To me it has only a superficial description of the facets of Morse code and lacks much of the substance.

Morse Code is written for the American market and many of the procedures, frequencies and equipment described, do not translate well to Australian conditions.

The book starts with some of the history of code development after justification of the code's existence then describes the code (both international and American Morse), and describes some techniques used to learn it.

Operating equipment, handling of emergency calls, as well as a look into the future complete the book.

Morse Code has several deficiencies in addition to its American orientation. In the history section, the Vail family received very short mention, when Alfred Vail did more work on the code than most credit him for.

Key construction and operation is for Americans and most operators in Australia would oppose what is described. I recommend that this section is ignored.

There are other criticisms, but these are minor. They are things such as the definition of a word; the book defines a word as any five letter group.

Usually, for speed considerations, a word is either Morse or Paris, as both use the same voltage level. Also, the use of ON as internationally accepted is wrong. By example, QNH does not mean that your net frequency is high, it is an adjusted barometric pressure used mostly for aviation and meteorology.

I enjoyed reading the history of Morse Code, but as a whole, I can find little to recommend in this book.
The community, and radio amateurs especially, are still suffering from electro-magnetic compatibility problems, as predicted by the writer 30 years ago. We are now seeking for EMC standards for appliances, backed by the new communications legislation. We hope that both will be at least as effective in protecting appliance and transmitter users, as has already been the case overseas for a number of years.

Please tell us your EMC appliance problems in cases where manufacturers of broadcast, television, video recorders and computers were willing, able and successful in improving their products. They deserve our appreciation and gratitude. The interesting cases will be published in AR. We can all learn from others' experience. For a start, let me briefly mention some of mine.

**DEFINITIONS**

TVI: Interference to television reception by illegal radiation.
TVA: Television reception is Affected by legal radiation due to insufficient (perhaps illegal) immunity, or efficiency, or too great susceptibility.
JTVC: Interference to cable television reception by (perhaps illegal) radiation from the television set.

**1. THE HOPELESS, UNFORTUNATELY TYPICAL, CASE**

Neighbour X knocks at the door one evening.
VK2AOU — Who is there please?
(No reply by neighbour).

Neighbour X (Pointing at VK2AOU and shouting) — You are causing interference to my television!

VK2AOU — I am sorry that you have this problem with your television. Please come inside, and see that my transmitter does not affect your television or video recorder!

Neighbour X — I am not interested!
VK2AOU — My transmitter does not cause interference. It is operated according to the legal requirements of the licence granted by the DOC, and was checked by Radio Inspectors.

Neighbour X — I am not interested!
VK2AOU — If you give me your name and address, I may be able to help you by attaching a filter to improve the selectivity of your television. Or we could contact the Service Department of the manufacturer, who may be on the list of those who are willing to assist customers.

Neighbour X — I am not interested. I will complain to the Post Office.
(No neighbour leaves).

**2. THE WELL-INFORMED, FRIENDLY NEIGHBOUR**

Dennis came one day, saying, "I am sorry to tell you that your television is not selective enough. I can see lines when you transmit. I know this problem from the UK, if you could perhaps make a high-pass filter? Drop it in my letter box. I can install it myself."

That fixed it. "*** About 10 years later he came again, grinning, and said, "Thanks for the filter. My new television does not need one. Here it is. You can give it to a less lucky neighbour."

The radio amateurs' life would be easy if all neighbours with EMC problems were like Dennis!

**3. LATER TELEVISION MODELS ARE NOT NECESSARILY BETTER**

A friendly neighbour apologised to tell me that he had recently experienced TVA. I went to see his television set. There was an older television set, which was not affected by my transmission, and on top stood a new model of the same brand, which was affected. This made it clear that the new set would not comply with EMC immunity standards as they have applied in West Germany for years, making import to that country illegal. So the inferior television set is sold in Australia to un-informed customers. Since the new model television rental and sales firm was on the "Assist List" compiled by VK3QQ, I wrote a letter to the service department explaining the situation, asking the neighbour to counter sign the letter. I have not received a reply, nor did I get any further complaints. High-pass and mains-line filters did not help. The shielding of the filters could not be earthed effectively, because there was not much of a metal chassis.

**4. THE HELPFUL GRAETZ COMPANY**

A neighbour (the lady was from Hamburg, the husband was Australian) told me that my transmitter affected their latest model high class Graetze television set from West Germany. All my efforts with high-pass and mains-line filters, coaxial feeder and balun (which I bought) were in vain. They phoned the importer's service department several times, and it told me to write to the Sydney to Sydney to train local service people. They would arrange for these experts to attend to our complaint. Three weeks later, after half hour of tests, they had fixed it free of charge. They did not say what they had done. This was in December 1976.

**5. THE TELEVISION SERVICE MAN**

Our neighbour next door has a bargain television set (VHF only), which is not only affected by my legal transmission on 14 MHz, but also causes severe interference (ITV) due to the (illegal) coaxial line-frequency oscillator. About every 15 kHz a high frequency noise band of S7 signal strength is radiated, often making it impossible to have QSOs with less strong stations from the south-east of Europe on long path. There is an Australian standard (the same as in DL) specifying the permitted maximum radiation from television sets. My own television (East Germany) was absolute useless, even when I switched off the picture if the transmitter amplifier was used. The neighbour called the service man, who told me that my transmitter amplifier was shut-down, so she told me later. Having been informed by me on EMC, she did not follow his proposal. The high-pass filter the service man brought was useless; even when I asked him to install it directly at the tuner. My homemade filter brought some improvement. A coaxial cable from UK turn transformer at the antenna terminal helped too to some degree. Earthing the feeder braid to a water pipe, where the feeder enters the house at floor level helped too. So did a 30 degree antenna direction change. Heating the signal line-frequency oscillator tells me when to use low power (100 watt PEP maximum), or to turn the beam away when possible.

I invited the service man to see that my television was not affected, and I showed him the transmitter, attached low-pass filter, and that no RF was on the mains cable or outside the PA enclosure. I gave a lecture on EMC and showed him my 10 cm thick folders containing EMC papers and collected publications on TVA and ITV going as far back as 1952. I also mentioned the above-mentioned cases. He thanked me and appeared converted. I hope he won't automatically blame radio amateurs in future.

These five cases clearly show the situation in Australia and what should be done and by whom to overcome the problem, which has already been published in the DOC, CQ-DL and electronic magazines (not only by AR). Adequate legal EMC standards, followed by compliance and service with technical know-how by the industry, would do the job.

6. LOEWE OPTA GmbH WRITES IN CQ-DL MAGAZINE
(translated by VK2AOU)

We propose the following procedure:

a. It has to be determined that the unwanted effect is not caused by an aerial pre-amplifier (wide-band pre-amplifiers are illegal in West Germany. They must contain band-pass circuits for the television ranges).

b. The television antenna must have a coaxial feed line, and the signal level must be sufficiently high to allow "snow-free" picture reception.

c. It is desirable to have the case investigated by the appropriate Postal-Service Department (there are Rf teams in over 70 towns). A copy of the report should be forwarded to the Grundig company.

d. All relevant details of the TV case should be made available to assist us. If the problem persists after complying with the above conditions, one of our experts will be asked to investigate this job and attempt to fix the television at the owner's location. In especially difficult cases the set will be sent by the dealer to our factory, and the individual set modifications will be carried out by our R and D laboratory. In this case too, no charge will be made. Please inform the members (15 000) of our club in the appropriate manner, so that in the case of TVA help can be rendered to appliance owners and radio amateurs. Loewe Opta GmbH.

THE HELPFUL GRUNDIG COMPANY
(translated by VK2AOU from CQ-DL magazine 10/1977)

A colour television set (VHF only), which was recently bought in July from the Grundig Company (Europe's largest electronics appliance manufacturer) showed TVA in the picture if the transmitter amplifier was used (750 watts maximum permitted). The distance between the transmitting and television antennas was four metres. The case was investigated without calling the Post Office radio inspector. The details were submitted to the Grundig company in Nuremberg. I received within two weeks, without "red tape" and free of charge, a high-pass filter, a RF separation transformer (atop RF on the coaxial braid from bypassing this shield) and a mains-line filter with installation instructions. The mains-line filter cured the problem. Holes and space required to install the filter were already provided on the chassis. (Yes, there was a chassis, not just PC boards!). DK1RV, Kreuztal, West Germany.

Court actions would have been a waste of time and money, but would have caused bitterness in all these cases, compared with the understanding and able help by the appliance manufacturers.

8. THE HELPFUL RADIO INSPECTORS
(they were radio amateurs too)

OST and CQ-DL magazines reported several years ago a difficult picture trace of TVA. Several attempts and tests by two radio inspectors, with excellent equipment, resulted in AMATEUR RADIO, November 1986 - Page 43
the discovery of a hidden "passive harmonic generator" corrupting a clean amateur transmitter signal. A wide-band antenna pre-amplifier had been disconnected from the power supply (as it, the illegal wide-band type, was no longer required). But it was still connected to the television antenna. The harmonic free amateur signal was picked up by the television antenna. The first transistor of the "cold" pre-amplifier acted as a diode (a non-linear device), rectifying and distorting the clean sine wave signal, thus producing a wide range of harmonics. Harmonics which coincided with the selected television channel on the attached television set, or any other nearby television set via re-radiation, were selected by the pre-amplifier and television set. Removing the unused pre-amplifier solved the problem.

Again, it had been wrong to blame the radio amateur. We will look next time at the circuit of a 10 year old television set, which includes several features allowing achievement of a very high degree of EMC (immunity to unwanted signals). Readers may compare it with their own television set circuit to see the difference (if any) in design to achieve EMC.

It seems, that the radio amateur's life especially was not meant to be easy — but interesting!

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**SWR COUPLER FAILURE IN FL2100Z**

The failure of the 10 pF trimmer capacitor (TC201 in the coupler unit board (PC-2056A) of the Yaesu FL2100Z will result in the destruction of almost all the other components on the board.

If such damage does occur, and the components need replacing, a suitable air-spaced variable capacitor to replace TC201 may be difficult to locate.

If this is the case, it appears that operation without the trimmer is possible without apparent effect on the performance of the system.
TECHNICAL MAILBOX

VK3MC...Box Hill, Vic

Craig raises the question of what is the reason for the change in paper and print quality in our local AR. It is indeed a concern.

Firstly, the transformation triggered, a bright flash came from the PA cage, a whiff of smoke, accompanied by a big bang. As the lights faded, an expensive smell wafted into my nostrils...

...with a whiff of smoke. Bob, Strange how seemingly simple tasks, like replacing the final PA tubes in your transceiver or linear amplifier, can lead to such turmoil. Well, is that strange? Let us go back over what most likely happened and put forward some suggestions that may well save you such exciting drama!

Firstly, those new tubes, which you practically had to twist at arm's length to obtain, may not be "new" as you wished to believe. Many of the types obtained now-a-days are not exactly a daily production-line product and most likely have been sitting around on the shelves for several weeks. Don't get me wrong, they are not like tomatoes and deteriorate completely whilst on the shelf, but a few simple precautions may go a long way in ensuring their extended life span. In fact, in our case, the "new" tubes were certainly not new.

Before removing the tubes, take a vacuum cleaner and blow all the dust out of the compartment. Fan and undercool. (This is a job which is best done outside). Remove the valves and park them on a flat surface. The latter voltage is generally derived from a screen dropping resistor. Also, you will need to disconnect the bias supply. Study the circuit thoroughly and note the voltages and the wattages of the various components. If this is not possible, you may need to run across the bleed resistor being open-circuit. It is a good time to check this now.

Okay, now let us go about this methodically to avoid risk to life and rig. If the rig is one of the "common garden variety" (FT101, TS520, etc), you will have your plate and screen voltages coming from a single rectifier via a single high voltage winding. The latter voltage is generally derived from a screen dropping resistor. Also, you will need to disconnect the bias supply. Study the circuit thoroughly and note the voltages and the wattages of the various components.

Finally, keep your drive as low as possible for a while. Turn off the VOX and wind-off the AF gain. In this way, you may be sure that you are not exceeding the voltage rating of the electrolytics. It is certain not to be a good time to check this now.

In the case of the high SWR

Living in Melbourne, need I say that it was pouring with rain at the time and, whilst operating AMTOR or RTTY on 80 or 40 metres, I was getting RF into what seemingly was coming from a single rectifier via a single high voltage winding. The latter voltage is generally derived from a screen dropping resistor. Also, you will need to disconnect the bias supply. Study the circuit thoroughly and note the voltages and the wattages of the various components. If this is not possible, you may need to run across the bleed resistor being open-circuit. It is a good time to check this now.

Before removing the tubes, take a vacuum cleaner and blow all the dust out of the compartment. Fan and undercool. (This is a job which is best done outside). Remove the valves and park them on a flat surface.

Noise on 432 MHz I observed a much lower value than expected. It must be up there somewhere. Out came the Noise Bridge (it is a bit special for these cases) and, low and behold, the SWR was "spot-on."

To cut a long story short, the problem was with the Bird 43 Thruline Wattmeter. For those with one of these units, the trouble was the meter connection to the sampling point. It must have been dirty (although it appeared spotless), for all was cured by cleaning the connection. Instantly, the SWR returned to normal. Incidentally, a common problem with this meter can occur with the connections between the plugs in sensor and the main housing. The most common cause is a connection of the wrong type to the body of the insert can also cause trouble. The symptom is, intermittent or no readings. Here the cure is to re-tension the connection finger, clean the connection and check that the correct type of connection has been made. The above fault was unusual as it was none of these problems.

My low Sun Noise is yet to be corrected, but it is now quite low. A short was found on the PTT lead which was going downhill as they are prone to do with time.

RF GETTING INTO THE KEYBOARD OF AN IBM CLONE

Whilst operating AMTOR or RTTY on 80 or 40 metres, I was getting RF into what seemed to be the keyboard curly-cord connecting the computer. It was so bad that on 80 metres, only 25

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watts of RF output would cause total loss of control. Having tried all the normal filtering and grounding techniques on the computer without success, I was faced with what appeared to be a case of removing the mother-board and adding ferrite beads and bypass capacitors. This did not thrill me very much, as those owners of clones will testify!

Upon opening the keyboard, it appeared that the curly-cord was not shielded so I went out and bought a length of double shielded cable and a DIN plug. I wired the plug and then reopened the keyboard.

The next task was to remove the wires from an eight-pin, in-line miniature socket. This entailed using a very fine probe to extract the pins. (A terrible task!).

Whilst doing this, pin two seemed to have a somewhat thicker wire than the others — it was shielded cable! Naturally, it was not connected!!! Well, the answer was simple. Scrape the solder resist adjacent to this pin (they already provide the pad) and attach about 150 mm of hookup wire to this point. You will notice that the keyboard has a metal plate onto which the keypad PCB is mounted and also the back cover is another metal plate. Simply solder a spade terminal lug to the end of the wire and another halfway along this wire. (It is advisable to strip the insulation). Clean both covers around the mounting holes (I actually tinned each), and place the lugs over the holes. Lower the back cover down over the lug and replace the screws. What you have done is simply grounded the top and bottom metal plates to the shield. Not a sign of RF is getting into the keyboard now and radiation from the keyboard has all but vanished.

This was not an isolated instance as I have knowledge of several other clones which were configured and responded in the same fashion.

---

Cartoon courtesy The Propagator

WOW! IT'S HERE

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I have to open the column with news of more intruders, but information received from IARU Region 1 reports the following:

“Despite Resolution 641 of WARC 1979, three more broadcast stations have appeared in the 70-71 MHz band. (1) Radio Iran, 7075 MHz (and 9400), 1830 to 1930 UTC; (2) Radio Damascus, 7090 MHz, 1800 to 1830 UTC; and (3) Trans-World Radio (Monte Carlo) 7100 MHz, 1800 to 2100 UTC.”

Fortunately these are Region 3 observations, and may or may not cause interference to amateur stations here in Region 2. We hope they don’t!

**JUSTICE METED OUT?**

Bill W7JIE, the Region 2 Monitoring System Coordinator also has news for us this month. Gib reports that he has information to hand that the USSR operates over 2000 jamming stations, with a personnel allotment of 15,000 people to run the machines!! No wonder we run across so many jammers in our travels around the bands.

On a lighter note, the USSR recently accused Great Britain of jamming some of the Russian transmitters. Particularly, they are accused of sending 14,051 MHz at about 0210 UTC using CW and passing commercial traffic. Quite regular offenders, and the IW would be pleased to hear from any other amateurs or SWL’s who have heard these transmissions. We are showing their ignorance, bored, or just more interested in the forthcoming coffee.

**INTERJUDICIAL WATCH**

Queensland is reporting the following for their own field, cannot come to terms with the lack of specialised knowledge of an average audience. An astute lecturer can assess the audience reaction and adjust the level accordingly. Too low a level, of course, results in boredom instead of confusion.

**LENGTH:**

There is a limit to how much should be presented in one session. If a long session is necessary, give a few minutes break in the middle, or schedule it to be two parts around a coffee break, thus avoiding “information overload”, stiff joints, and audience discomfort.

**QUESTIONS:**

It is the lecturers prerogative to decide whether questions will be accepted during the talk, afterwards, or not at all. If accepted, they should be treated seriously, and answered clearly and concisely. It may be necessary to backtrack until a problem is resolved, or offer to discuss the question in more detail personally later.

Incidentally, a lack of questions at the end does not necessarily mean that all is crystal clear to the listeners. Perhaps they have not understood, or are too embarrassed to ask. We are showing their ignorance, bored, or just more interested in the forthcoming coffee.

**VOICE AND MANNER:**

There is need for variations in voice pitch and speed. Body movement helps too — anything that brings back the listeners’ wandering attention. Visual aids such as films, slides and overhead projector transparencies are also useful interruptions to a long talk.

**VISUAL AIDS:**

These are usually only aids, used to elaborate or clarify the lecture material, not as a way of presenting maximum information in minimum time. They should be relevant, clear, adequately labelled, and legible from all parts of the room or hall.

I have a lot of diagrams or figures to be shown, many listeners appreciate copies being made available afterwards. Handouts can also substitute for slides or transparencies.

**IN SUMMARY:**

The success and value of a lecture is not always in the words alone. The content could be presented on a sheet of paper and we could all go home an hour earlier. Sometimes I feel this would be preferable but a lecturer who is prepared to give thought to the manner of presentation as well as the content is more likely to receive a second invitation.

Best wishes to all those sitting for the November examinations. Remember to read the question and all the answers too!
The schedule for the new UO-11, which is designed to take advantage of easy up-loading and large memory, will be scheduled for TT&C (tracking and data collection) and DSR (data storage recorder) operations. The schedule is divided into two main sections: the "bulletin" portion and the "WOD Requests." The bulletin portion of the UO-11 rotation will be on UTC Wednesdays, primarily for school demonstrations. This will probably not happen until October, because the software must be written, tested, and installed. It will be worth the wait, though, since the higher deviation on the UO-11 FM downlinks will mean a much clearer Digitalker signal, and the signal strength will increase. Wednesday will see both the 70 cm and the two metre beacon on. The 70 cm beacon will carry a mixture of 1200 bit/sec data, 4800 bit/sec DSR data. The DSR data is intended mainly for those testing demodulator designs. We hope that 4800 bit/sec transmissions will stimulate interest, perhaps resulting in a demodulator design being published and further DSR/CCD timing being scheduled.

The 2 GHz beacon will transmit on UTC Saturdays beginning in October. We encourage experimenters to send up reports of the SHF beacon reception. WOD channels will be selected with an eye toward interesting combinations of telemetry capability that UO-11 users should write in with their "WOD Requests."
for an SASE from AMSAT-Australia, c/o PO Box 1234, GPO, Adelaide, SA, 5001. Printed circuit boards and a kit of parts are also available from the same address. At the time of writing, the estimated cost of the PCB was $50 and about $25 for the additional kit of parts.

Brief Description

MODEM: Downlink — Receive audio PSK demodulator to TTL digital. 1200
     BPS, Uplink — 1200 BPS Manchester encoding modulator to
     microphone level, transmit audio. Receive carrier LOCK LED indic-
     ation. Selectable loop bandwidth. Morse code (CW) regenerated tone
     output.

CONNECTS: to AX.25 TNC "modem disconnect" jack. Suitable for TNC-1 or TNC-3.
     Only four connections — TXdata, RXdata, TXclock, Gnd.

DIGITAL AFG: tracks changing doppler shift via the Up/Down signal lines for your
     receiver. Designed for all known Icom, Trio and Yaesu standards.
     Adjustable for 10-100 Hz/step. Positive pulses, negative pulses and Icom bi-level. Tracking
     ON/OFF switch. Manual tuning indication by LEDs and/or centre-zero meter.

POWER: AC mains PSU built-in or 12 volts AC input or 12 to 14 volts DC, 20
     watts to -60 dBm). If the harmonics are 60 dB
     above the level of the 145 MHz transmit frequency, but
     additional problems can be eliminated by adding a low pass filter (LPF) or band pass filter (BPF) to the transmitter to reduce
     the level of the third harmonic by 100 dB (from 10 watts to -60 dBm). If the harmonics are 60 dB
     below the fundamental (as the regulations say they should be) then the LPF or BPF needs to supply at least 40 dB attenuation. To eliminate
     receiver intermodulation due to strong local signals, it is also a good idea to use a filter at the receiver input.

R27-R29 470k
R30 27k
R31 750k
R32 56k
R33-R35 68k
R36-R39 47k
R40 470k
R41-R42 47k

Capacitors
C1 1n
C13 10n
C14 2n
C15-C20 100n
C21-C23 16V tantal.
C24 ** 470u 25V
C25 560 pF

Integrated Circuits
U7 4070 Quad Exor
U8 4065 Hex Inverter Buffer
U9 74LS00 Hex Inverter OC
U4-U5 TL084 Quad op-amp
U6 4040 12 stage divider
U8 4015 four bit shift register
U6 4016 Grade Divide by 16 (MC14161)
U10 4011 Quad 2 Input Nand
U11 4046 Phase Locked Loop
U12 7805 five volt regulator
U28 7812 12 volt regulator

Semiconductors
Q1-3 BC107 etc (ordinary NPN)
C1-4 1N4004 etc
D1-2 1N4004 etc
VR-1 1 M trimmer 3/4" square, flat mounting: eg RS 187-321, Dubilier

Sundries
M1 ± 100 uA
meter ** eg RS 259-549, Farnell
S1-2 SPDT toggle switch •
T1 12 volts 3A
VA transformer ** eg RS 297-829, Farnell
T0, 1, 2, 3, 4

For JAS-1 J-modem, you transmit in the 145 MHz band and receive in the 430 MHz band. The 430 MHz receive frequency is not exactly the third harmonic of the 145 MHz transmit frequency, but there can be problems such as intermodulation or receiver desensitisation. These problems can be eliminated by adding a low pass filter (LPF) or band pass filter (BPF) to the transmitter to reduce the level of the third harmonic by 100 dB (from 10 watts to -60 dBm). If the harmonics are 60 dB below the fundamental (as the regulations say they should be) then the LPF or BPF needs to supply at least 40 dB attenuation. To eliminate receiver intermodulation due to strong local signals, it is also a good idea to use a filter at the receiver input.

This article describes suitable transmit and receive filters.
AWARDS ISSUED RECENTLY

DXCC PHONE
348 Ray Dobson VK50I
234 David Jewell VK0DJ
235 Bert Lower VK5AOL

DXCC OPEN
1500 Donald Simmonds KSBOX

WAVKCA
Congratulations are extended to David, on the first WIA DXCC from mainland Antarctica, so far as the records show!

ALGOA BRANCH AWARD
This award is available to any amateur who submits proof of contacting stations in at least four categories of the eight categories listed below. Endorsements will be issued for any further categories contacted.

Categories
1. Any member of the Algoa Branch of the SA Amateur Radio Society.
2. ZS1, ZS2, ZS4, ZS5 or ZS6. Republic of South Africa.
3. ZS2 Namibia.
4. H5 Bophuthatswana.
5. S4 Giskei.
6. S8 Transkei.
7. V9 Venda.
8. 7P Lesotho, 3DE Swaziland or A2 Botswana.

All contacts must be made on or after January 1, 1986 and may be in any mode on 160, 80, 40, 20, 15 or 10 metres.

The award is issued free of charge.

Applications, with QSL cards, should be sent to:
The Awards Manager, Algoa Branch Award, PO Box 10050, Linton Grange, 6015 Port Elizabeth, Republic of South Africa.

Members are: ZS2s — A, AAE, BE, C, DJ, DO, F, G, HH, HV, JG, JK, KU, MD, NC, NH, OC, OE, OM, RN, SM, SP, U, UI, W, WM.

MELLISH 87 DXPEDITION
An Australian-American Effort
The following is a letter from Ken Keenan K4ADN, 8699 66th Street North, Pinellas Park, FL 33781, USA, requesting the award of a certificate to the following operators.

Transmit filter (435 MHz notch)
A single quarter-wave open stub for 435 MHz connected in parallel with the feeder (Figure 12 (1)) gives 40 dB attenuation at 435 MHz, and 1.5 SWR at 145 MHz. Using two such stubs spaced a quarter-wave apart gives 80 dB attenuation and 1.5 SWR. Spacing two such stubs at 0.8-wave gives attenuation of 70 dB and 1.1 SWR. The circuit in Figure 13 (with 0.7-wave spacing) gives attenuation of 70 dB, and SWR can be adjusted to 1 with the 5 pf trimmer. If about 40 dB attenuation is sufficient, use Figure 14.

This combines a quarter-wave open stub and half-wave shorted stub (at 435 MHz). The combination (quarter-wave plus half-wave) acts as a quarter-wave shorted stub; in parallel resonant circuit, at 145 MHz, so SWR is virtually unaffected (under 1.1).

Receive filter (145 MHz notch)
A quarter-wave open stub for 145 MHz looks like a three-quarter-wave open stub on 435 MHz — loss on both bands is 40 db (see Figure 15 (1)). For Figure 15 (2), L1 plus L2 equals half-wave open stub at 435 MHz, (loss is only .25 db), but the loading due to L2 causes the resonant frequency of L1 plus L3 to fall to 100 MHz. Trim L3 for resonance at 145 MHz (see Figure 15 (3)). SWR is 1.1. These filters can be built inside your rig if space permits — this will not affect filter characteristics.

Constructional cautions
Dimensions in the figures are in millimetres. Use 75-ohm coaxial cable for the stubs — for high Q and high attenuation.

Connect the stubs as per Figure 11:
1. Measure from centre of joint. Tin the centre 20 millimetres of braid.
2. Use cutter; do not cut wire.
3. Solder braid where it touches, cover joint with heatshrink.
4. Wrap with copper foil and solder.

Awards
AWARD WINNERS FROM THE US
Mary Duffyfield WA6KFA, a retired Santa Cruz, CA high school class and is an Eagle Scout. He has been a licensed amateur since 1978.

The Perry Hadlock, K2IK Memorial Scholarship of $500 was awarded to Michael Dargel N1AMR, of East Lyme, Connecticut.

The Paul and Helen Grauer Scholarship, $500, was awarded to John Alcorn KA0EMS, of Sedalia Missouri. KA0EMS ranked second in his high school class and is presently attending the University of Missouri at Rolla majoring in Aerospace Engineering. He has been licensed since 1979.

— From The ARRL Letter, September 15, 1986

WIA 75 AWARDS
Following are further recipients of the WIA 75 Award.
Certificate No 673 — Bolek SP8JMA
Certificate No 674 — Chairil Hamid YC7DF
Certificate No 675 — H S Yamani YC7DX
Certificate No 676 — Prokess One Club YB7ZXX
Certificate No 677 — Simon YC7OC
Certificate No 678 — Widjaja Kiharto YC3DSK
Certificate No 679 — Dion Soemardiono YC3JV

RF LIGHTING DEVICES
The ARRL has filed comments regarding FCC proposals to impose radiation limits on radio frequency (RF) lighting devices operating below 30 MHz. This is to ensure that these devices do not interfere with other radio services, including the amateur service.

RF lighting is a new technology in which RF energy is used to produce light. RF bulbs are incidental radiation devices to the extent that a portion of the RF energy escapes into space, with the potential for causing interference.

In 1983, the ARRL Laboratoies conducted tests on several of these bulbs which indicated interference signal strengths from S1 to S7 or frequencies from 63 kHz through to 7300 kHz, with the receiver using an indoor antenna a metre from the bulb.

The ARRL believes that the radiation levels of the bulbs tested are considerably less than maximum levels proposed by the Commission in their petition. The ARRL suggests that the FCC encourage the private sector to produce an adequate set of standards, and that the bulbs carry labels which would educate consumers about the potential interference.

— From The ARRL Letter, August 15, 1986
You will have noted that I have not as yet covered the Kenwood enthusiasts.

If you have been a regular follower of this series, you will recall that the first amateur band SSB/CW transceiver released by Trio in Australia, was the TS-500. It was first advertised in the May 1966 issue of AR magazine.

During the mid-1960s, Trio produced several popular general coverage receivers, the best known being the 9R-59 series. These used a basic single conversion set-up with a 455 kHz IF. Two tuning dials gave general coverage tuning, plus calibrated band spread on the amateur bands. Even today, these receivers are prized possessions with the listening fraternity, especially broadcast band DXers.

However, they did have their problems with frequency stability and poor dial-readout ability. Dating from the 1960s, they were a tube-type circuit throughout.

Coverage was from 550 kHz to 30 MHz in four bands. A total of eight tubes, plus diodes for AM detector, noise limiter, AGC and power supply, were used. A product detector was provided for SSB reception. Many modifications were published in Amateur Radio magazine during the mid-1970 period.

New price for the 9R-59DE in 1967 was $180. The later, but very similar 9R-59DS was $175 in 1970. Secondhand value today would be about $75 for both models.

The first amateur band SSB/CW transceiver released by Trio in Australia, was the TS-500. It was first advertised in the May 1966 issue of AR magazine.

It was basically a tube design, but did have two transistors in the VFO and one in the crystal calibrator (the crystal was an optional extra). The 80 to 10 metre amateur bands (no WARC bands, of course) were covered in 600 kHz steps. A single conversion setup was used with an IF frequency of 3390 kHz and a rather basic four-pole crystal filter.

The VFO was followed with a crystal mixer to provide the correct injection frequency. A pair of 6LQ6s were used in the final stage with about 100 watts PEP output. The two major problems with the TS-500 were rather poor frequency stability and the very wide selectivity of the four-pole crystal filter.

The TS-500 was normally supplied with a matching AC power supply, although this was an option and many transceiver were powered from home-built supplies. Another option was an external VFO, the VFO-5, but no DC power supply was available for mobile operation.

In general, the TS-500 was rather overshadowed by the FT-200 transceiver, which offered very much better performance for a similar price.

The new prices of the TS-500 transceiver with matching PS-500 power supply was $576 when first released in 1968. Secondhand value today would be about $175. The external VFO would add another $40.

A receiver-only version of the TS-500 known as the JR-500SE was available at the same time as the transceiver. It was an amateur band only receiver and used the same VFO as the transceiver to provide 600 kHz segments on each of five bands with three segments on 10 metres.

A double conversion IF was used with the main strapping being provided by so-called mechanical filters at 455 kHz. Only one choice of selectivity was available for all modes and this was quoted as 3 kHz at -6 dB.

Seven tubes, two transistors and five diodes were used. I have never used a JR-500SE, so I can only speculate as to its performance which I imagine would have similar problems as the TS-500 transceiver.

New price was $295 and the secondhand value of this rather rare piece of equipment would be about $100.

In 1971, Trio announced a new transceiver, the TS-510. This transceiver had the same general specifications as the TS-500, but was much improved in the stability and selectivity departments.

By a strange coincidence, it had a remarkable similarity in many respects to the Heathkit SB100 and SB102 transceivers. The IF was the same with a double conversion setup using frequencies of 65 and 60 MHz.

Whilst it was still basically a tube-type transceiver, a few more transistors were used, compared to the older TS-500. A similar range of accessory items were available which included the AC power supply and a remote VFO. The calibrator crystal was still an optional extra.

The TS-510 was never widely promoted in Australia, which was rather a pity as it was a very satisfactory transceiver.

New price is not known, but I suspect that with power supply it was in the region of $500. Secondhand value would be about $225, today.

The next transmitter in the Trio-Kenwood range was the TS-511S. I am unaware if any of these were sold in Australia.

They were available in the United States about 1972. Very similar in concept to the TS-510, but now with 37 transistors, four FETs and one IC. The day of the solid-state transceiver was on the way.

Power output was up to around 200 watts with a pair of 6LQ6s in the final. PEP power input was rated at 450 watts up to 21 MHz and 360 watts on 10 metres. This put them into the same class as the Yaesu FTDX-400(401) series.

If you ever find a secondhand unit available, I would suggest a value of about $300 with the matching AC power supply.

The last of the early Trio-Kenwoods to be covered this month is the TS-900. Although not common, a few examples are known to exist in this country. The 900 was really the forerunner of the TS-820 and at the time, was the flagship of the Trio Kenwood transceiver line up.

Only three tubes were used in the transmitter final and driver stages and these were two 6LQ6s and one 12AT7. The rest was solid-state with no less than 57 transistors, 16 FETs and three ICs. There was no digital frequency display, but the analogue tuning dial was very similar to the TS-820. A high standard of construction was used with plug-in modular boards used throughout. The power supply was still a separate unit — the PS-900 — and a remote VFO was an option.

It is believed that the TS-900 was capable of an excellent standard of performance. Secondhand value today would be in the region of $450 with the matching power supply.

Next time we will discuss later Kenwood HF transceivers from the TS-520 onwards.
COMPACT DISC PLANT TREBLED TO TAP WORLD MARKET

Plans for Australia's first manufacturing facility for compact discs due to be in operation by March 1987, have been significantly upgraded to capitalise on the world-wide shortfall in compact disc production which is forecast to continue well into the 1990s.

Details of the decision, which will see an Australian company become one of the largest disc producers of CDs in the world before the end of next year, were announced in Sydney by Disctronics Limited.

These plans will see the company more than treble its music recording capacity, from $18 million to $38 million and the annual output of compact discs will rise from a planned five million units per annum to 15 million per annum. In addition to the music recording industry, compact discs have important new applications in the electronic data storage industry. One disc has the capacity to store the equivalent of 150 000 printed pages or 1200 standard five and a quarter inch floppy discs - equal to a compact 25 volume encyclopedia.

It is believed by many industry observers, that CD-ROM (Read Only Memory) technology can make existing on-line data bases largely obsolete.

NOISE BRIDGE FOR MEASURING WIDE Z-RANGE

The MFI-202B Antenna Noise Bridge is capable of measuring resistance, reactance and impedance into the region of thousands of ohms.

Most noise bridges allow only measurements in the tens or, at most, hundreds of ohms, which generally becomes inconvenient, particularly when working with wire array-type antennas. The MFI-202B incorporates a specially designed 'Range Expander' which allows it to read up to 3800 ohms resistance, and capacitive and inductive reactances of up to 1900 ohms.

The noise bridges have a very high accuracy as they are individually factory calibrated before despatch from Starkville, Mississippi.

Using the unit in conjunction with an appropriate receiver over its operating frequency range of 1 to 100 MHz opens up a whole new world of tuned circuit measurements.

Some of the useful tasks covered in the MFI-202B's manual are: Finding Antenna Resonant Frequency, Cutting a Halfwave Dipole to Frequency, Tuned Circuit Alignment, Measurement of RF Amplifier Impedances, RF Transformers and Baluns, and Capacitance and Inductance Measurement.

For further information or a brochure contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. (03) 973 7777.

TALK THROUGH YOUR EAR

The Ear-Mike is a unique combination earphone and microphone which enables the wearer to receive, and transmit by using the voice energy detected in the ear canal.

Human speech is generated from the Larynx (voice-box) and an extremely small amount of this energy in the form of air movement is carried to the ear drum causing it to modulate.

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The EM-200 Ear-Mike and Interface Unit.

In the case of personnel wearing breathing apparatus, such as firefighters, the Ear-Mike solves their communications problems.

The unit has a small interface which goes between the transducer and a hand-held type radio. This black-box, usually worn on a belt alongside the radio, contains a two stage amplifier powered by a 1.5 volt cell and has a press-to-talk function.

The Ear-Mike was awarded a gold medal at the Exposition of International Inventions in Geneva, 1984. It is now used by defence departments, security services, law enforcement agencies, emergency services, aviation authorities and private enterprise.

Hayden-Spike is now developing another export potential product — a digital encryption (scrambler) device for portable radios — which can be programmed with up to six billion different encryption codes. —Submitted by Jim Linton VK3PC
The station calling CQ should send the responding station's call sign once (because there may be several stations answering) and will then give the signal report and serial number. Repeats are usually not given unless requested. Signal reports are usually given as 5/9/9 regardless of the facts of the matter, and I shall refrain from making any further comment on that subject aside from noting that reports were not even required in the 1985 RD.

Nines and zeros are coded because they are so common (N = 9, 9 = 0), so exchange of 5/9/9 008 would be sent as 5NNT TT8. The break signal BK (— . . . —) is then sent to invite the other station to transmit. Often it is sent as B (space) K, and sometimes K is used by itself. Sometimes, the break is preceded by "QSL?"

The second station then sends "QSL UR NR 599 132 BK".

As is the case in phone contests, it is up to the station which called CQ to send any pleasantries, such as GL E E, and he may or may not listen for an acknowledgment (E E) before calling the other station (if he copied both call signs), or calling CQ again.

Unlike most CW activities, successful participation in a contest does not depend on any great skill in your copying speed for "normal" CW. You can generally work a station calling CQ at twice to three times your normal copying speed.

Firstly, the format is so standardised that all you have to pick out is a call sign and a number. You can listen to two or three calls before answering in order to be sure of the call sign; you can listen to the next contact the person makes in order to verify the number. Secondly, asking for a repeat is as simple as sending a question mark. For example, if you missed the number, you send "NR? K." Finally, although you may start out listening to CQ calls three or four times, it does not take long before you can pick them up first time. It is generally recognised that any five words-per-minute novice can recognise a single character at speeds up to 50 WPM, and three or four characters at 25 WPM is not difficult.

As far as sending speed is concerned, you should send as fast as you can and still be readable at the other end. But as I have said before, slow down to match a slower operator, or you will waste valuable time in repeats. If you want a contact (why else would you be in the contest?), be patient.

By all means, have a go at the Sprint, and I look forward to exchanging numbers with you.

73 till the 15th.

The Winter VK/ZL QSO Parties took place on
August 11 (7 MHz), and August 18 (3.5 MHz), the
time of the Sprint Day. It was quite an
achievement to record a contact even in one's own
area, and a ZL was really something!

Consequently, very few saw out the whole period of the party, and it was as good as over by half time.

VK3JA, on CW only, had the most QSOs (15),
while VK3VF (14) had it most on combined modes.

VK3ZT, on SSB, was third in participation.

On 3.5 MHz, it was a much better picture with
skip troubles being negligible, but still some QRN

— the main trouble was people forgetting the
Party was on!

VK3JA was top again with 24 QSOs, this time

on CW and SSB. VK3YW with 12 QSOs was top

CQ-only.

One last comment — because the Sprint is
restricted to an hour and a half on 80 metres, it is
fair to say that we will need a reasonable portion of
the band, particularly in view of the fact that the
nuisance allocation only includes 10 kHz
(3.525-3.535 MHz) of the portion restricted to CW
only by gentlemen’s agreement. We may have to
put up with some flack from phone operators who
think that 3.535+ is exclusive phone, but do not
let it worry you.

Now it might be appropriate to review some of
the finer points of CW contesting. The following
paragraphs will form a general introduction to the
subject, and, I hope, encourage some otherwise
timid souls to get their feet wet in what should be a
valuable educational and practical exercise — the
First National CW Sprint.

There are some fringe benefits to participation in a CW contest which make it attractive to the
non-contesters among us — you can experience a wide variety of sending styles and speeds in a
very short time, and significantly improve your “ear” or copying ability while you are at it. As with
any contest, the basic point of the Sprint is to
make as many contacts as possible, as fast as
possible. Therefore, contest exchanges are cut
down to the bare bones. The Sprint contest
exchange requires call sign, signal report (RST),
and a serial number. It will look something like this:

(Station 1) CQ TEST DE VK9ABC K — or (CQ
Sprint) DE VK9ABC K

(Station 2) VK2DXP NR 5 N TT8 BK

(Station 3) DE VK5NBG K (two stations have responded)

(Station 1) R GL E E VK5NBG NR 5 N TT9 BK

There is not much to it, is there? And, when you
consider that most of these exchanges take place
at 20-30 WPM, or faster, the contact rate can be
very high indeed. Sometimes, the break is preceded by "QSL?"

making any further comment on that subject aside
from noting that reports were not even required in

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forward to exchanging numbers with you.

73 till the 15th.

Radio Amateur Old Timers Club

John Tutton VK3ZC
11 Coooolongatta Road, Camberwell, Vic. 3124

WINTER QSO PARTIES

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DEVIL NEWS from the North-West

Last meeting there were 12 members and four visitors, one being VK7NAE in the North. It was good to welcome Owen VK7OL, back from his 3-4 month tour on the "big island." Owen and his wife, Nancy had a most enjoyable holiday.

The repeater, VK7RAD, on 146.625 MHz is now on site and operational. The repeater is run by solar power and is being turned off at night because the cold weather turns it on and leaves it running all night. Andrew VK7ZAP, the repeater on prior to going to work in the morning and off again at night. This on/off routine will continue. KL6RU has six months to look at the site and make some adjustments to the unit. These adjustments have to be made when the temperature is minus-four degrees, so it is going to be an unpleasant task. There is no doubt about the extent that it is unable to be used or normal use, it will be turned off completely until the adjustments are made! A special thanks is extended to all the amateurs who have participated in the repeater project.

Greg VK7ZBT, was most embarrassed when someone let "cat out of the bag" and the members sang Happy Birthday to him.

Further discussions took place in reference to Camp Quality, and a committee has been formed. Further information may be obtained from John VK7ZPT, Noel VK7EG or Tony VK7AH.

The club station has still not been on-air from its new QTH, as members have had other commitments, however it is hoped things will be underway shortly.

The club realised $100 from the auction mentioned in last month's column. As this was so successful, there will undoubtedly be another one in the future.

Arthur VK7SE, is in need of operators to do News Broadcast Relays — volunteers please contact Jonathon Marks.

GSLS are still very quiet.

The evening concluded with a most interesting computer display provided by VK1, VK8, MB, NAE, ZAP, KAB and AH. Each had different programs and some had printers and disc drives.

GOLD COAST AMATEUR RADIO SOCIETY

The Ninth Annual Gold Coast Hamfest will be held on November 22, 1986, from 9 am to 6 pm. The venue will be the Albert Waterways Complex, Brookwater, near Jackeroo Casino and Pacific Fair. This year's Fest will be bigger and better than ever. Everyone welcome.

—Contributed by John VK7AKD, Chairman Organisation Committee, Gold Coast Annual Hamfest

Spotlight on SWling

Well, 1986 is rapidly drawing to a close. What a year it has been for me personally. Little did I realise just 12 months ago that my life and status would radically alter. It has been an interesting, but disappointing year, as far as the radio conditions are concerned. It is taking longer and longer to get out of the trough of the current Sunspot Cycle, although I think we are slowly climbing upwards.

By way of propagation on the HF bands, higher frequencies will have improved, allowing signals from Europe and the Middle East to come in during the late evening hours. Hopefully, conditions on 10 and 15 metres will also pick up, I am certainly looking forward to trying them from my new QTH in West Launceston. I am writing this in mid-September, so I have not had time to fully evaluate its potential. I have been encouraged so far, with observations made from a trap marine vertical antenna.

It is interesting to note the difference between vertical and horizontal polarisation on propagation. I do hear signals much earlier on the vertical than on the G5RV, while the horizontal is superior on signals much closer to Australia. It is very interesting to make comparisons between the two.

There has been a consistent rumour going around that KYOI, in Japan, is reportedly being sold to the "Christian Science Monitor." You may recollect that this organisation has had plans to commence a shortwave broadcasting service from a site within the Continental US. KYOI mainly broadcasts pop music to Japan. This station got into serious financial difficulties, because the expected commercial sponsorship did not eventuate, so they have appealed on-air for the listening audience to send in donations to keep it going. They have raised US$20 000 from this unusual source of fund-raisings, still not enough to meet KYOI's debts. At deadline time, KYOI was still there on 15.190 MHz with its usual staple of "rock" with announcements in Japanese and English. Thanks to Arthur Cushen and the DX Post for the above information.

According to a report on Media Network from Jonathon Marks at the ERATO Electronics Fair in Sydney, Kenwood will be releasing a new tabletop communications receiver, either later this year or early in 1987. The R5000 model will reportedly have 100 memories plus keypad tuning with on-screen displays, a large display, and price tag was about US$1000. Looks as if Sony and Icom are going to have some stiff competition to their models that have similar features.

Just a few weeks ago, I took my R70 receiver down to our holiday home at Weymouth, which is located on the northern coast of Tasmania. Predictably, I was able to hear many more signals, particularly on the medium frequencies, away from the strong local stations on 1.008 and 1.098 MHz. I was fortunate in hearing, what I suspect was an American MW station on 1.120 MHz, with pop music. There were plenty of others also with pop music, but I was unable to ascertain where in the USA they were located, although they were not Australian or New Zealand stations, because they were on 10 kHz steps. Plenty of Asian signals as well were audible, under domestic AM stations. 1.440 MHz provided quite a number, as no Australian stations are allocated there. Later on, the powerful 1200 kW sender in Saudi Arabia is easily heard, even on a transistor portable.

Yet another highlight for me was the reception of long-wave signals. That is the broadcasting stations that are allocated between 150 and 300 kHz, mainly located in Europe and the USSR. 1.440 MHz provided quite a number, as no Australian stations are allocated there. Later on, the powerful 1200 kW sender in Saudi Arabia is easily heard, even on a transistor portable.

So I tuned down even lower to see what else I could hear. Imagine my surprise to hear TTY tones on 145, 137, 134 and 127 kHz respectively. They were not strong but there was little QSB. If it had been HF breakthrough on the R70, I would have noticed the rapid QSB. These presumably are military signals with high power.

But it did not end there, as there were consistent TTY tones around the clock on 45 kHz. The other发送s were not observable in the receiving headset, the 45 kHz signals just consistent there. Then it dawned on me — the Navy has been transmitting on that channel for many years from Bolencon, Australian Northern Territory. So I have been surprised by the performance of the R70 on the LW bands in remote locales well away from nearby VK7 senders. Hopefully, in the future, I shall be able to go on another "DXpedition" and really enjoy listening.

Before I do forget, I have received a request from two international broadcasters for technical reports of their broadcasts to Australia. Both have been experiencing difficulties and would welcome critical reports on their transmissions. The first one is Radio Veritas Manila, Philippines. This station recently acquired some new senders to replace the previous ones, which were sabotaged by pro-Marcos forces during the revolution earlier this year.

They are at present on in English twice daily.

From 0130 until 0155 UTC on 11.730 and 15.275 MHz and at 1500 to 1530 UTC, they are on 9.568 and 15.120 MHz. They are especially keen to get reports from Australia on their new transmitters.

Their address is:

Radio Veritas
English Service
PO Box 939
Manilla, Philippines.

The second station requiring assistance with reception reports is the External Services Division of All India Radio. They are broadcasting to Australia from 0900 until 1000 UTC and at 2045 until 2230 UTC and these transmissions are a part of the General Overseas Service. The frequencies for the evening schedule are 11.910 and 15.355 MHz while the morning release is on 9.550, 9.910 and 11.715 MHz.

Reports should be sent to the Director of External Services, All India Radio, PO Box 500, New Delhi, 110001, India.

The BBC External Services have given Marconi Communications Systems a contract to supply equipment and antennas for their new relay in Hong Kong. It is due for completion early next year and will improve the audibility of the BBC World Service in northern and eastern Asia. The transmitters will be 250 kW incorporating Pulsam modulation and will have remote control via a digital data link. There will be four multiband curtain arrays with model/slew switching. This should give DXers a chance of obtaining a new country before the Territory reverts back to China in 1997.

Well, that is all for this month. Until next time, the very best of DXing and 73.

—Robin VK7RH

Retirement

Roy Neel K6DUE, (seen on Australian television particularly during the "Amateur in Space") has announced his retirement from his position as West Coast Bureau Chief of NBC Network News. Although he will remain with NBC on a consulting basis, Roy plans to devote much of his time to making personal appearances and lecturing on amateur radio.

In addition, he plans to be involved in various television projects through his own company "Talent Connections." Included will be at least one new production on his favourite subject: Amateur Radio.

—From The ARRL Letter, September 15, 1986
There are some very talented people in the computer field and most, if not all, have computers and are heavily into RTTY, both glass and mechanical. He says a decision was made to streamline the committee and broaden the Club out into the electronics field.

Kerry says; "There is an incredible interest shown by school children, and teenagers, in the electronics and computers so we figure we will try to attract them and convert a few along the way to amateur radio." He says it is a two-way thing — the existing club members will also learn from the youngsters — in the schools the children teach the teachers about computers, now!

He considers the era of electronics and computer hobbyists among youngsters has not been generally recognised by the amateur radio fraternity.

GGREC is going out into the community (including visits to other clubs) and using whatever media it can to make itself known as a club for anyone interested in computers, electronics or radio communications.

Kerry says, "We are certainly going into the field — offering ourselves to retailers for in-store promotions of their products and publicising the Club at the same time."

He admits the drive behind the public relations activity is one of survival — the Club's future viability depends on it. Kerry also says he believes the bottom of the sunspot cycle, with its poor top end HP propagation has contributed to the lack of interest in amateur radio. The amateur radio fraternity must be prepared, he warns, to take advantage of any increased interest in radio communications, such as through CB radio, when readily available HF DX returns.

The Club ran test transmissions in 1984 to check propagation for a planned six metre repeater, but this project waned due to transmitter problems, however, it is the GGREC's long-term aim to get the project going.

A highlight of the GGREC calendar is the Alexandra Apex Club Cross-Country Horse Trial in April each year. The Club is famous for the communications facilities it provides for the event held in very rugged mountain country near Rubicon, in northern Victoria. This includes check-point reports safety communications and a computerised results service.

GGREC has clubrooms in the 1st Oakwood Park Scout Hall in Heyington Crescent, Dandenong, which includes its club station, VK3BJA, and a test equipment library. Some members also have access to test equipment which they make available.

Help is always there for anyone who wants to build a kit, (and there are many now available through various sources) or to rescue someone having difficulty in making a construction project operational.

GGREC publishes a bimonthly newsletter called Gateway, and membership is concentrated on a line between Dandenong and Oakleigh, with a few living in Cranbourne. However, where you live does not matter, if you think the Club suits your interests the GGREC will greet you in a warm friendly manner as either a visitor or member.

Meetings are held at 8 pm on the third Friday of the month, chosen purposely to avoid clashing with other metropolitan clubs which usually meet on the second and fourth Fridays.

Visitors are made most welcome or inquiries may be made to Kerry Clayton, PO Box 98, Dandenong, Vic. 3175 phone (059) 96 3580.

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**Write an Article for AMATEUR RADIO!**

### Ian J. Truscott’s ELECTRONIC WORLD

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The following applications were received for the addition of 3.610 MHz, Tuesday at 8 pm, VK4WII.

3.610 MHz, Friday at 8 pm, except the third Friday in March, unless otherwise advertised. The Redcliffe Radio Club has devised a very new and unique system which is very popular. A new repeater for 7150 has been assembled by several members of the club. The rig will contain dual VFOs, plus offset tuning, a speech processor, noise blanker, and receive tuning, a speech processor, noise blanker.

A new amateur HF transceiver, called the New Englander, has been developed by several members of the club. The rig will contain dual VFOs, plus offset tuning, a speech processor, noise blanker, and receive tuning. The New Englander will be sold for $3,000 OBO. The rig will also be sold with a built-in weather station and a solar panel.

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Five-Eighth Wave

I think the last week in August and the first week in September should have been designated “Community Involvement Fortnight” in VK5 this year. We really stretched both our volunteers and resources to the limit but in both cases the events undertaken were without a hitch.

The events were, of course, the WICEN communications provided for the State Bank Discovery Trial (Route 2000 Hitchhike Rally) and allied events at the Marion Library to celebrate the centenary of the Marion Council District. I will not give a full report here as John Hampel VK5SJ (Marion) and Bill VK5AWM (WICEN) will be doing that in a forthcoming issue of AR. (I believe John has booked several pages in advance, and our thanks to Maria VK5MT, for volunteering to do the typing).

Actually, it is at times like these that you discover who your true friends are and it is a wonder that I am still talking to John Hampel! On one of the days that I spent down there helping to operate the Display station, after a hard day talking, both on and off the air, I climbed wearily into my car to discover a parking sticker under my windscreen wiper (this in a private car park between the Library and Council Chambers). On reading it, I discovered it was not a legitimate one, but one making rude remarks about my parking ability (which I might add were quite unfounded!).

It was not until several days later that I discovered that John was the perpetrator.

Not content with that, at the reception which the Mayor of Marion gave for those of us involved, John said a few words in answer to the short speech which the Mayor made thanking us for our involvement. Before I realised what was going on John had invited the President of the South Australian Division of WICEN to say a few words.” (no press). I believe VK5JJS will be doing that in a forthcoming issue of AR. (I believe John has booked several pages in advance, and our thanks to Maria VK5MT, for volunteering to do the typing).

Following the official events, there was a social hour for those who were involved and some of the others who came along. The WICEN event created a monumental headache for both the two principal characters. Bill VK5AWM, our WICEN Director, had to find amateurs to operate all the rally checkpoints, many of which required four-wheel drive vehicles to get to them. Joy VK5YJ, on the other hand, only had to get people to drive as far as Hindmarsh to operate the Base Station. The catch was that she needed enough people to cover a period of 24 hours for eight days. No mean feat! I mean to say, where do you find people mad enough to volunteer to sit up all night; I was still wondering this as I watched the sun rise as I drove home on Tuesday morning, having shared the shift with Joy and my son, David VK5ZHB. I also wondered what the neighbours would think as I arrived home at 6.30 am!

So to all those volunteers, whether they did the night shift or the day shift; to all those who drove 100s or 1000s of km, sometimes in the rain or freezing cold. To those who lost sleep or gained blood-pressure worrying over the organisation; to all those people right across the State who were involved in either of the two events and to John VK5SJ and his team, who put together the displays and events connected with Marion, we say a huge —

THANK YOU!

DIARY DATES

November 1 — Buy and Sell, an all day event at Westbourne Park Community Hall, Goodwood Road, Westbourne Park. Organised by the Adelaide Hills ARS.

November 15 — National Sprint CW Section.

November 22 — National Sprint Phone Section.

November 25 — General Meeting (also no information at time of going to press).

December 9 — Christmas Social at 7.45 pm.

December 10 — Buy and Sell, an all day event at Westbourne Park Community Hall, Goodwood Road, Westbourne Park. Organised by the Adelaide Hills ARS.

December 15 — National Sprint CW Section.

December 22 — National Sprint Phone Section.

December 29 — General Meeting (also no information at time of going to press).

JUBILEE 150 AWARD

Firstly, a correction and an apology. In an earlier list I said that Certificate No 329 was issued to VK2KXY. I am not sure where I got that call sign from, but it is definitely my error as Certificate 329 was issued to Les Mcintyre VK3XF. My apologies Les, and that I hoped that it did not cause you too much inconvenience or embarrassment. Now for the latest award winners.

485 VK2APE 490 VK2VYS

493 VK5NSI 494 VK2DUP

497 VK4SK 498 VK3ABP

502 VK1DW 504 VK4KHZ

507 VK5KMW 510 VK2AH

513 VK5BWF 515 L20508

518 ZL4QX 519 SWLZ1-261

520 VK5SM 522 VK2MIZ

528 SWLZ8 Holz 529 VK5EF

532 KE7HJW 527 L50126

528 KE5VH 529 NG8Z

530 KOCNM 531 N7GWA/EV3

532 OPELE 533 K5AWD

534 K5AWAC 535 VE4ANA

536 WOLOE 537 SWLW5

538 N6CBW 539 N8FXLM8

540 W1LFE 541 K4AAQI

542 K1TIA 543 K8KYN/7

544 WA2PJI 545 VE3FII

545 K5PGS 547 WA5O

548 WA5GUD 549 WD4RAF

550 K89UKV 551 K9GUXC

552 K1OT 553 WO9HWN

554 WB7TLU 555 N0GMB

556 K50XY 557 K9LZP

558 K5LZV 559 K5AYJ

560 WBENZ 561 KB4ANRZ

562 WB6UVW 563 WA2REC

564 NOFRT 565 ZL1N

566 WA2RXS 567 W7VIIH

568 KD0VY 569 K5TLP

570 WA4OF 571 K5QFR

572 KB5AID 573 K5AOOC

574 NSHWI 575 N6NL

577 PYZ2J 578 LUC1Z

579 CE1FGT 580 SY4JK

581 PYZ2BBO 582 W7NTM

583 N8GUD 584 WA6BIJ

585 N3ASJ 586 K2CZT

587 KB2AYK 588 WF-MCJ

589 WA8IMF 590 K9DHK

591 KA2PFAJ 592 W5KMI

593 WB50GD 594 N1BTE

595 KA2UGL 596 N0HJF

597 KATCR 598 KD9J

599 AAA0N 600 KAL1LH

601 KA1LXT 602 KF5DX

603 WA6UJW 604 KVNS

605 KFSHZ 606 KAI1LP

607 WSUOM 608 NSJH

609 WD8BEC 610 CE6DN

611 WOZRA 612 N4KRV

613 KE5ES 614 N9EZV

615 VK3PHK 616 VK5GAS/2nd

619 VK4VR 620 VK2EXA

621 W9DUCG 622 NSAPB

623 N8CCK 624 K47YPD

625 N1DYN 626 KASMJ

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JUST A LINE...  Just a line to say you put out a fine magazine. 73,
Ed Rumming ZL1TG.

CHUCKLING ENJOYMENT. I enjoyed the article on Direct Conversion Receivers by VK3XU. It is a long time since I built a receiver.
I chuckled at the answers given in Technical Mailbox. Might as well be gossiping over the garage fence. I know almost exactly what the writer said. Good show. Yours, 73,
Don Law VK2AIL, RMB 626 Adelong Road, Tumblur, NSW, 2729.

DISCUSSION PAPER
With reference to the recently published Linton-Harrison paper on future trends in AR and the replies which followed; many readers seem to have overlooked the possibility of allowing digital modes on the Citizens Band Radio Service (CBRS). Instead of reducing the levels of entry into the amateur service to increase membership, why not allow the “Computer Whiz Kids” to discover two-way radio the cheapest and easiest way.
The small percentage who would be potential amateurs will soon discover the differences between both services. If AR information is available via computer bulletin board services and published in computing magazines the exposure would give the boost in members to the CBRS required.
CBRS consists of 40 channels using AM/SSB at 27 MHz and a further 40 channels using FM at 476-477 MHz. Experience on these bands goes a long way in preparing everyone to enter our 10 metre and 70 cm amateur bands.
I believe the expense of advertising would be minimal compared to the administration problems and the new licence-grads, examination syllabus, syllabus band plans, etc. A minor change by DOC to CBRS conditions of use to include digital modes would appear to be the logical answer.
73,
Steve Stephens VK4KHQ, PO Box 2154, Mount Isa, Qld. 4825.

INCREASE OUR NUMBERS
Over the past few months, there have been a variety of ideas put forward as to ways in which we can measurably increase the number of amateur radio operators in Australia. A lengthy detailed paper on additional entry points, etc to the amateur radio ranks was presented by Jim Linton and Roger Harrison; and Gordon Bracewell presented another less radical concept in August AR.
Over to You, Ted Gabriel; and Gordon Bracewell presented another concept and from my experience many amateurs will create, what I consider, to be one of the finest pictorial covers yet. Reproduction from the postcard especially surpassed my hopes and expectations. I have already had feedback from friends interstate, who feel it is worth framing. I have myself sent copies to USA, UK and New Zealand.
I wish thanks for the opportunity to publicise the Castlemaine Award in this special year for the RAN and the ship. It is, by far, the best “exposure” we have had. I know many an ex-Navy amateur will be thrilled to see evidence, that part of our Maritime history is “alive and well.”
My best wishes to the team.
Kind regards,
Margaret Nalby VK3QOU, Castlemaine Group Manager — VK3RAN, PO Box 144, Elwood, Vic. 3184.

HELP REQUIRED
Some time ago my wife Johanne DL4AG and I, decided to try to leave Europe with out two little children.
My first problem is to find a position as a physicist in an Industrialised country, where the people may need someone to work in the radio frequency and microwave area (industrial research, antennas, equipment design, computer-aided design and simulation, new integrated circuit programming (Fortran, Algol, PL1, Pascal) and teaching would also be very welcome.
We thought of Australia, of course, and that among the members of the Federal Committee, there are professionals who can give me the names of companies and institutions that may be interested to receive my resume.
Many thanks in advance.
With best regards,
Klaus Münther DC5XE, Huchtweg 17, D-3300 Braunschweig, Germany.

S E L D O M  C O M E S  T R U E
I was interested in reading the article in AR of July 1986, Prophecy from the Past. Reading it a second time it came to mind that a prophecy seldom comes true in the lifetime of the person who made the prophecy.
It made me think of my article in AR of October 1985, in reporting my QSO with W7ACS/KH6 on 50 MHz, which made me consider my world-wide record, and where I more or less prophesied that WAC would be possible. WAC on 50 MHz did occur months later, and although, I did not obtain that ambition, I know of many my world-wide friends did procure that distinction.
Your sincerely,
C H Castle VK5KL, 29 Turnbull Road, Enfield, SA. 5085.

VHF/UHF CONTESTING
I would like to make some observations on VHF/UHF contesting in Australia. Based on a number of years of entering the Ross Hull Contest over the Christmas/New Year break, and various entries in the John Hancock Day and Remembrance Day Contest, there is a considerable amount of activity that does not appear as contest entries.
Also, the contest opportunities for limited call licensees are somewhat limited — the PD and JMF — have traditionally assumed that all contacts will be WM local and thus score minimum points. There is thus minimal incentive to try any SSB DX — well, if you ignore the multi-score local FM contact. So, VHF activity just acts as fill in between bursts of HF activity, or when the VHF propagation reduces the scoring rate. There is very little point in trying hard for VHF DX.

Over to You! and interest in the actual use of radio communications is not where their interest lies. Their interest is in the arena of computers and the software that goes with them. Some would find the radio communication a means to an end. I believe that would, it is much cheaper over long distances to use radio communications than to use the Telecom system. The concept of computer buffs being granted a digital type of licence has, on the surface, considerable merit, but it would require a licence to be a means to an end? I believe that it would; it is much cheaper over long distances to use radio communications than to use the Telecom system. Your sincerely,
Rodney Champless VK3XJ, PO Box 31, Heims Court, Berwick, Vic. 3806.
and United States, I checked through back-issues of Red Com and QST. It was at this point that I became aware of 'squares' and the benefits that they brought to operators going after VHF/UHF DX in general. Alas, squares have been slow to catch on in the rest of the world, but that is slowly changing. My own research started to show some interesting facts. UK and USA VHF/UHF enthusiasts have many contests available to them. Scoring is usually based on frequency and location of the contact, where distance is determined by locator squares. Some contests are single band only, and to overcome possible difficulties with propagation, are either of 30-40 frequencies. The RSGB publishes a basic set of general rules for both HF and VHF/UHF contests, with particular contests selecting an appropriate standard. There is also a code of practice for contest operation. It is also interesting to note that not only are repeaters banned in ARRL contests, but also the use of repeater frequencies and the national FM calling frequency (146.520 MHz in the USA) are banned.

A new twist to the VHF/UHF contests in America was the introduction of locator squares into the Spring Sprints in April 1983. These are six hour contests, with different dates for each band. Judging by the reports of contest activity in QST, this has been an outstanding success. Perhaps the greatest thing that has happened to VHF since the "Towor" " suggested KAI ECL. In fact, John Lindholm W1XX, of the ARRL Headquarters Staff, has suggested that "those competitions which have been the greatest thing that has happened to VHF in the USA, since the CW and SSB portions have been introduced as prizes..." Perhaps it is time we had something like this here?

The second and final meeting of the Sydney/Melbourne UHF Repeater Linked System was held at the beginning of September.

The introduction of 'squares' was intended to penalize a repeater on any band provided that it was not used in aur, but that is clearly not the case. 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In his 33 years in aviation he progressed from basic operating tasks to the top position of his field in New South Wales — a great achievement!

George was a helpful, kind, competent person who was highly respected by all, as can be judged by the scores of tributes received by his wife Thelma and son, Robert.

Typical of George's benevolence in general, and to amateur radio in particular, he bequeathed his radio equipment, mast, aerials, etc to the Gold Coast Radio Society for furthering its activities.

Deepest sympathy is extended to George's wife Thelma and son, Robert.

—Ken Irwin VK4KXG

GORDON AUGUSTESEN VK4XG ex-VK4JN

"Gus", as he was known to his friends was 71 years old when he passed on at the Gold Coast after suffering poor health for the past two years. Gus spent his whole working life associated with the electrical and electronics Industry, consequently he was well known among the Brisbane electrical and radio wholesalers and retailers, and as a poet World War II, when he served as a radar technician with the RAAF.

From Astor Radio Gus started his own business, Tel Air, specialising in Hi-Fi, television and amateur radio equipment, from 1966 until his retirement to the Gold Coast some years ago while still enjoying amateur radio, particularly on 70 cm and with another television. The latter equipment was donated to Gold Coast amateurs by his son.

Gus was secretary of the WIA, Queensland Division for some three years post-war and pre-war particularly took part in the mobile transceiving activities. As VK4JN, Gus broadcast records on 200 metres from Mitchelton.

Gus is survived by his wife Dawn, son Jeff and daughter Linda, to whom the sympathies of his amateur friends is passed.

—Contributed by Peter Brown VK4PJ

Obituaries

Solar Geophysical Summary JULY

Solar activity was very low in July with no energetic flares being observed. Despite the low activity there were a number of small regions visible on the solar disk in the periods 3rd to 22nd and 25th to 31st, with the highest sunspot number for July, the yearly averaged sunspot number for July, the yearly averaged sunspot number has started to fall once again. The average value for January was 13.9. This is lower than the values observed since April 1985, which have been close to a value of 17.

The yearly averaged numbers for 1985 were 8/5 - 20; 9/5 - 20; 10/5 - 19.1; 11/5 - 18.0; 12/5 = 17.6; 1/6 - 17.8; 2/6 - 17.5; 3/6 - 16.7; 4/6 - 16.5; 5/6 = 16.6; 6/6 - 17.1; 7/6 - 17.4; 8/6 - 17.0; 9/6 = 15.4; 10/6 = 13.9.

The monthly average for 7/86 was 17.8 (8/6 = 0.0; 9/6 = 13.1). The 10 cm readings for the month were: 1 = 67; 2 = 68; 3 = 67; 4 = 69; 5 = 77; 6 = 70; 7 = 68; 8 = 97; 9 = 73; 10 = 73; 11 = 72; 12 = 71; 13 = 76; 14 = 73; 15 = 72; 16 = 71; 17 = 70; 18 = 77; 19 = 70; 20 = 71; 21 = 70; 22 = 71; 23 = 77; 24 = 70; 25 = 72; 26 = 30; 27 = 71. Average was 70.3.

GEOMAGNETIC

July continued the recent trend of quiet months as are normal close to solar minimum. The most significant disturbed period was the period 24-27 with the A-index reaching a peak value of only 20.

July 2 The geomagnetic field was disturbed in the period 08-1500 UTC. A = 7.

July 24-27 The geomagnetic field was disturbed after 1800 UTC on 24th and was at storm levels until 0000 UTC on 25th. The field was disturbed at times on 26th, 27th, and 28th.

July 29-30 The geomagnetic field was somewhat disturbed the entire day on 29th and the first half of 30th. A = 11.1.

From data supplied by the Department of Science, IRS Radio and Space Services, July 1986.

WHAT'S HAPPENING IN THE IONOSPHERE with VK2QL

For Sydney, MUFs were down 10 to 15 percent on the local daytime hours during July. The only disturbed period in Sydney was July 28, when ionospheric critical frequencies were slightly depressed during the day. In the Northern Hemisphere, ionospheric critical frequencies were depressed for the period July 22 to 31. Solar activity was expected to be low in September.

VK2QL has been going back through some records and logs, and those new to chasing DX may find some of the facts interesting.

One hears there is an 11 year cycle during which conditions reach their peak and bottom. This is not the case, for example, Cycle 21 is expected to bottom this year. Cycle 20 bottomed in 1976, Cycle 19 in 1963, and Cycle 18 in 1954, so on that short period we do not have one 11 year cycle.

In the Swiss Observatory bulletin for June 1976, they made the comment that in the first half of 1976, 42 sunspots had appeared, only six of them belonging to the new cycle, which is the current one. VK2QL has a copy of all cycles since 1700. Those who were active in DXing in the late 50s will remember the excellent conditions of Cycle 19, when the peak was over 200. The only cycle which may find some of the facts interesting.

The Department of Communications is asking all state police departments to appoint radio licensing inspectors. A DOC spokesman says the Australian Federal Police already have licensing inspector powers under the Radiocommunications Act, but they hope state police will appoint some of their officers as well to help enforce the Radcom Act. This will ultimately result in state police checking to see if mobile and portable equipment is licenced, as mobile and portable gear, is currently licenced.

DOC is to introduce a system whereby stickers would have to be placed on mobile or portable transceiving equipment to help readily identify licenced equipment.

The Western Australian Police Commissioner has already agreed to appoint inspectors — making the State the first.

DOC estimates that unlicensed equipment costs it up to $6 million a year in lost revenue. It has also made it clear to the state police departments that it will work with them to combat radar jammers. Police in most States fear jammers will be used to interfere with police radar speed traps.

A leading US electronics magazine earlier this year featured a technical construction article on how to make one. The device could be set to give "false targets" to the police radar while the vehicle in which it was installed travelled well above the legal speed limit.

Use of a jammer, which is an illegal transmitter, and causing deliberate interference, are offences under the Radiocommunications Act — but state legislation may find some of the facts interesting.

On that short period we do not have one 11 year cycle. Some state governments are moving to outlaw radar detectors, used in motor vehicles to give drivers in advance warning of police radar speed traps. These receivers are not covered by the Radcom Act — but some legislation is being considered to make it an offence to sell or possess a radar detector.

They can cost several hundred dollars and were sold by motoring and electronics shops. One retailers says he estimates one top model detector has sales of 10 000 throughout Australia. The unit covered by the Radcom Act — but state legislation may find some of the facts interesting.

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Use of a jammer, which is an illegal transmitter, and causing deliberate interference, are offences under the Radiocommunications Act — but state legislation may find some of the facts interesting.
**Silent Keys**

It is with deep regret we record the passing of

MR BRUCE ATTWATER VK2AZC
MR GORDON AUGUSTESEN VK4XG
MR O L BROWN VK3ARL
MR L A OANCEY VK4LY
MR BILL DOUGLAS VK3GA
MR GEORGE MEATON VK4ASQ
MR R J NANKIVELL VK5AJN

**Hamads**

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers
* Eight lines free to all WIA members. $6.00 per 10 words minimum for non-members
* Copy in typewritten, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162
* Repeats may be charged at half rate
* OTHER means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:

- **$22.50** for four lines, plus **$2.00** per line (or part thereof)

DEADLINE

All copy for inclusion in the January 1987 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 10th November 1986.

Minimum charge — **$22.50** pre-payable

Copy is required to the Deadline as indicated below the indexes on page 1 of each issue.

**TRADE ADS**

**AMIDON FERROMAGNETIC CORES:** Large range for all receiver and Transmitting Applications. For data and price list send 105x 220mm SASE to: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No inquiries at office ... 11 Macken Street, Oakley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

**ZZV ANTENNA FARM:** Get with the action on ATV. We have antennas designed by Hi-Q Antennas for Channel 34. These antennas are available in both 10 and 18 elements. For further information and for all your antenna needs, contact ZZV Antenna Farm, VK2ZZV, OTHR. Ph:(0409) 54 8888.

AMATEUR RADIO, November 1986 - Page 83
WANTED — NSW

BEAM: 3 element tribander. VK2TG, 17 Nelson Street, Engadine, NSW 2237. Ph: (02) 520 4377.


COMMUNICATIONS READER: Yeasu FRG7700. VKQGC, QTHR. Ph: (044) 76 7927.

POWER SUPPLY: 13.5V, 20 A Kenwood PS-30 for use with Kenwood tx TS-1203. VK2EJJ. Ph: (08) 53 1385.

WANTED — VIC

ANY "RARE" RECORDINGS: of amateur radio contacts for Volume 2 of "The Sounds of Amateur Radio." We are particularly interested in recordings of contacts on Bands not now available to Australian amateurs, eg 112, 248 MHz, etc. We are also looking for recordings of unusual, etc, eg from Balistons, Aircraft, Submarines, etc. Any recording format can be handled from cylinders to CD. To the first instance please write to: Peter Wollenden VK4KJU, c/o Federal Office, PO Box 300, Caulfield South, Vic. 3145. Please include copies of Volume 1 "The Sounds of Amateur Radio" are still available for $7, plus post & packaging. Inquire at your local record store.

COPY OF CIRCUIT DIAGRAM & SERVICE MANUAL: for Trio SR-590. Will pay all costs. Must be air mail to New Caledonia. Phillip Hardstaff, Maintenance Technician, SPC, BP D5, Noumea Centre, New Caledonia.

HISTORICAL INFORMATION: Any leads on M A K Ryan reverse charge calls. VK3CNR QTHR. Ph: (03) 7231159.

VALVES: 6AH6, 6GK6, 8KD6. VR105MT. Will accept contact Jim Linton VK3PC, QTHR. Ph: (057) 62 3288 BH.

CRYSTALS: 80 metre, frequency 3.530 MHz ±50 ppm. Condition. $50 each. VK2ZHS, QTHR. Ph: (02) 59 5390.

FOR SALE — QLD

HELIAK 14" 50 ohm: 1 length 44cm, other 37m. Tender price for one or both. Charging label. VK4BRB, QTHR.

KENWOOD TKW-4000A: 2m/70cm dual band transceiver. 25W FM. Covers 144-148, 430-440 MHz, 16 memories, scan, priority, optional voice synthesizer, h/cw, pwr, etc. Mint cond. With mic, cradle. Manual, First class delivery. $590. VK4BZB. Ph: (07) 345 8731 AH.


SHACK CLEARANCE: Icom IC-220 2m SSB transceiver. $100. DC9L hornet 25W linear amplifier to suit IC-220. $200. Icom IC-500 6m SSB transceiver, $90. Hammarlund 200W linear amplifier to suit IC-500. $200. Marconil TF99S/3S5 signal generator (0.2 to 220 MHz) needs repair. $110. A Ratiomizer Model 600 deviation monitor (70 to 510 kHz) Needs repair. $15. A Ratiomizer model 200 AM signal generator (50 to 220 MHz) needs repair. $55. Multilab 5AB1 tube. $10. Greg VK4ZGC, QTHR. Ph: (07) 34 4278 BH.

FOR SALE — WA


ICOM IC-730 HF TRANSCEIVER: in good condition. Also one unmouted mobile bracket. $600 ONO. VK2ASU, QTHR. Ph: (08) 593 3986.

FOR SALE — RA


HEALTHKIT HUM QRP CW TRANSCEIVER: $180. Ross VK9EJ. Ph: (03) 497 7631.

RECOVER: VGC.

SPARE PARTS: 20k 5% resistors, 20yf, 10uF electrolytic capacitor, etc. $5 each. VK6RU, QTHR. Ph: (09) 385 9664.

ELECTRICAL DISHES: Rejected Ku band dishes. Suitable for ATV receiver. $100 each, for the lot. $800, will separate. Also 10A Heathkit alignment generator, Leader LAG 55, Yeasu YC-5005, Data Precision Digital Multimeter Mod 134, Heathkit Capacitor Comparator, 8-bit scope, 10-12A. All in good condition, see actuals. VK6RU, QTHR. Ph: (09) 385 9664.

HEATHKIT HUM QRP CW TRANSCEIVER: $180. Ross VK9EJ. Ph: (03) 497 7631.

FOR SALE — TASMANIA

TO BORROW: to photography circuits, data, Palesc SG1, SG2, SG5, SG6, SG8, SG9, SG10, SG11, SG12. Heathkit alignment generator, Leader LAG 55, Yeasu YC-5005, Data Precision Digital Multimeter Mod 134, Heathkit Capacitor Comparator, 8-bit scope, 10-12A. All in good condition, see actuals. VK6RU, QTHR. Ph: (09) 385 9664.

FOR SALE — ACT


FOR SALE — NSW

ANTENNAS: 440 MHz Yagi silver soldered brass construction, 12 elements. $55. 1296 MHz Yagi 18 elements, silver soldered brass construction. $55. Precision reflection.
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The new D-130 is one of the latest generation full coverage HF/VHF/UHF omnidirectional antennas. It provides continuous operation from 25 to 1300 MHz and is ideally suited to the likes of the AR-7202 or the ICOM IC-200Q scanning receivers. Also capable of transmitting on 6m, 2m, 70cm, 33cm & 2cm bands supplied at $495 + $18 P&P.

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Search no more for those hard to get ceramic egg insulators. GFS have now secured a reliable overseas service. Price $18 each. Plus $6 P&P.

Low Loss Foam Double Shielded Coaxial Cable

Low loss foam double shielded coaxial cable for use on a computer or teletype. Price $139 + $10 P&P.

Expanded Range of HF-VHF-UHF Antennas

Extra high performance RTTY CW modem kit for use on a computer or teletype. Price $199 - $8 P&P (kit) or $290 - $12 P&P (assembled).

Antenna Matcher for Continuous HF Coverage - MFJ-941D

Apart from being extremely versatile, the MFJ-941D includes a 6-position coax-switch SWR power meter, 4.1 Balun, and will feed balanced line, single wire and co-axial feed. Price $495 + $18 P&P.

2 KW Dummy Load

MFJ-250 Low SWR to 400 MHz, 2 KW PEP. supplied with transformer oil. Price $199 + $18 P&P.

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Simply plug into the antenna socket of your scanner and output on the aerial. Hand to get high sensitivity coverage from 400 kHz to 25 MHz. Supplied complete with battery and antenna. Price $139 + $10 P&P.

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MFJ-1224 Versatile RTTY CW modem interfaces with a computer and is supplied with software for VIC-20 or Commodore 64. Price $495 + $18 P&P.

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We now stock the popular range of electronic CB transceivers. A complete lore of each model to use for your application together with a full price and helpful information on which model to use for your application. Simply plug into the antenna socket of your scanner and output on the aerial. Hand to get high sensitivity coverage from 400 kHz to 25 MHz. Supplied complete with battery and antenna. Price $139 + $10 P&P.

New DebeGlass Wire

What is stronger than wire of equivalent cross section, non corrosive, non conductive and has virtually no elongation?

We now stock the popular range of electronic CB transceivers. A complete lore of each model to use for your application together with a full price and helpful information on which model to use for your application. Simply plug into the antenna socket of your scanner and output on the aerial. Hand to get high sensitivity coverage from 400 kHz to 25 MHz. Supplied complete with battery and antenna. Price $139 + $10 P&P.

Anchored Stationary Antennas

Our DebeGlass wire alternative is made of continuous filament fiberglass varnished in UV stabilized vinyl chloride. Compare the figures below:

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ANNUAL AR INDEX
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WISHES ALL A VERY MERRY CHRISTMAS AND A HAPPY NEW YEAR.

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THE MAIL ORDER SPECIALISTS. WRITE TO: P.O. BOX 33, KENSINGTON, NSW. 2033
Jenny VK5ANW, President of the VK5 Division, presents Marion Centenary Award Certificate No. 1 to Mrs June Appleby MP during the Centenary of the District of Marion. Due to space limitations in this issue, a full feature spread of the event will appear in January.

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**Important Information**

Material should be sent directly to PO Box 300, Caulfield South, Vic. 3162, by 9am, January 2, 1987. It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

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Many of you will by now have obtained your copy of the 1986-87 Call Book. Some of you will be disappointed at its reduced size this year, although regretfully the price is still the same as last year. As has been announced on the Divisional broadcasts, this is caused by the continually rising cost of printing and production, largely due to the diminishing value of the Australian dollar. We have cut costs this time by eliminating much of the technical material which last year comprised half the book.

Some of this material is still useful, but some of it becomes obsolete as time progresses and conditions and techniques change. Rather than repeat each year the same as last year, although regrettably the price is still higher, many of you will by now have obtained your copy of the 1986-87 Call Book, including an updated index. The VK Amateur Handbook would become a living volume, growing larger each year!

There would seem to be three possibilities:
- A thin Call Book (like the present issue) containing as well as the annually updated call signs a minimum of other material;
- A thicker volume (like last year) containing about 50 percent call signs and 50 percent other data, much of it unchanged over two or three years;
- An even thicker production which also provides some handbook-type technical material in the form of theory and construction articles.

Obviously these three alternatives are in increasing order of cost. Option 'c' will cost considerably more than 'a'. How much? We can't cost it until we know the market. From your viewpoint it may well be worth it. To go a stage further, rather than expect you to have to hunt through several years' call books to find a particular item, could we perhaps provide the data on detachable pages arranged for filing in a binder? Updates and auditions would accompany each year's Call Book, including an updated index. The VK Amateur Handbook would become a living volume, growing larger each year!

As is so often the case, we can only do for you what you tell us you want. So this issue of Amateur Radio is accompanied by a small questionnaire for you to tell us what you think of the Call Book plus Handbook idea. Fill it in and send it back with your subscription renewal. We promise that your reply will be separately processed from your renewal and not associated with your name and call sign unless you want it that way. You want complete anonymity? Send it back in another envelope, if you think it's worth 36 cents!

Another year now has only a few weeks to go. I hope you have all found 1986 better than it might have been. May we (the Publications Committee, the Executive, Belken and I) wish you all a very Merry Christmas and a happy and prosperous New Year.

Bill Rice VK3ABP
Editor

AMATEUR RADIO — the technological pursuit of radio communications by individuals

Radio communications, as a field of technology, has made tremendous advances since the first radio signals were transmitted, which was in very recent times when we consider the history of mankind.

We, as amateurs, have been actively involved in these advances. Amateur radio gives the opportunity for an individual to participate in the many aspects of radio communications — an opportunity that must never be denied.

Although the mysticism of the early achievements of radio amateurs has long since passed and the amateur is no longer considered the local wizard!

There can still be a sense of achievement and self-esteem, in mastering a new technique, proving a theory or finding an alternative simpler way to do things.

With the diverse nature of radio communications there are now many different aspects that attract individuals to amateur radio.

It is also important that the opportunity is always available for anyone to progress as an amateur from the simplest basic aspects of radio communications through to the most sophisticated, finding their own desired level of involvement as they go.

Amateur radio, while realising the technical nature of the pursuits, must not be elitist, entry must be accessible, but on the contrary, the pursuit of esoteric techniques must not be inhibited.

To this end, the current trend of self-regulation is to be welcomed.

Of course, some regulation, albeit self-regulation, is necessary to allow for the harmonious co-existence of the many different enthusiasms of the radio amateur.

In conclusion, if the amateur service, which is the pursuit of the techniques of radio communications purely out of self-interest, is to maintain viability, it has to keep moving with the time to make it attractive to the newcomer to attain his or her own goal.

I now take this opportunity of wishing you a Happy Christmas and a Prosperous New Year.

David Wardlaw VK3ADW
Federal President
KENWOOD
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TH-205A ILLUSTRATED

SENSATIONAL OFFER!

2 METRE
5 WATT
HAND HELD

Only $275

FEATURES

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TS-440S
HF TRANSCEIVER
$1585

The TS-440S is an HF transceiver designed for SSB, CW, AM, FM and AFSK modes of operation on all Amateur bands including the new WARC bands. It is the ultimate in compact size with the automatic antenna tuner built-in and featuring a highly efficient final amplifier cooling system. It incorporates a 100 KHz to 30 MHz general coverage receiver having superior dynamic range. Advanced digital technology controls the various functions, including dual digital VFOs, 100 memory channels, keyboard frequency selection, memory and programmable band scan, and RIT plus XIT. Additional operating features include full break-in CW (switchable to semi break-in), built-in automatic antenna tuner, IF shift, notch filter, IF filter selection, RF attenuator, speech processor, and other features for ease of operation and added versatility.

TS-940S
HF TRANSCEIVER
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The TS-940S is a competition class HF transceiver having every conceivable feature, and is designed for SSB, CW, AM, FM and FSK modes of operation on all 160 through 10 meter Amateur bands, including the new WARC bands. It incorporates an outstanding 150 KHz to 30 MHz general coverage receiver having a superior dynamic range (102 dB typical on 20 meters, 50 kHz spacing, 500 Hz CW bandwidth). Engineered with the serious DX'er/contest operator in mind, the TS-940S features a wide range of innovative interference rejection circuits, including SSB IF slope tuning, CW VBT (Variable bandwidth tuning), IF notch filter, AF tune circuit, Narrow/Wide filter selection, CW variable pitch control, dual-mode noise blanker, and RIT plus XIT.

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Ga As Fet RF Amp.
2 METRES AT A BUDGET $495

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TM-2570A
2M FM MOBILE TRANSCEIVERS

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50 WATTS $650
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Ga As Fet RF Amp.

TW-4100A
UHF/VHF FM DUAL BAND MOBILE TRANSCEIVER
144-148 Mhz – 420-450* Mhz
2M 50 Watts – 70cm 25 Watts
FULL DUPLEX BETWEEN BANDS
10 MEMORIES
*Adjustable.

NEW MODEL

THE INTRODUCTION OF THE TW-4100A HAS BEEN DELAYED UNTIL FURTHER NOTICE. CONTACT YOUR DEALER FOR DETAILS:

ORDER NOW! $875
The R-5000 is a new competition grade communications receiver which incorporates every conceivable operating feature. Designed for all modes of reception (SSB, CW, AM, FM, FSK), the R-5000 covers the frequency range from 100 kHz to 30 MHz, and with the addition of the optional VC-20 VHF converter, will also cover the 108 to 174 MHz range, again with all mode reception. The R-5000 has been designed with high performance in mind, and has an excellent dynamic range, together with carefully chosen operating facilities to match today’s conditions. Microprocessor control is used for main functions, including dual digital VFO’s, 100 memory channels, memory scrolling, memory and programmable band scan, and many other facilities.

**FEATURES**

- Coverage is 100 kHz to 30 MHz in 30 bands, with an additional range from 108 to 173 MHz using the optional VC-20 VHF converter.
- Advanced microprocessor control allows frequency, band and mode data to be stored, recalled, and displayed, even in the VHF band of the VC-20.
- The RF circuits of the R-5000 have been designed to give a high dynamic range, and with the 500 Hz bandwidth selected (YK-88C option), the intermodulation free dynamic range is 102 dB, with a third order intercept point of +14 dBm, and a noise floor of -138 dBm.
- High stability frequency control. The reference oscillator which determines the frequency stability and readout accuracy of the R-5000 is accurate to ±10 ppm within a temperature range of -10 to +50 degrees Celsius.
- 10 Hz step dual digital VFOs. Built in dual VFOs operate independently of each other, and allow split frequency and split mode operation. The frequency steps are basically 10 Hz, giving that “True VFO” feel when tuning. The frequency steps are changed to 1 KHz in AM mode, and 5 KHz in FM mode.
- Provision is made for the connection of both high and low impedance antenna systems.
- Superb Interference Reduction. Selectivity is enhanced by the use of dual crystal IF filters for SSB, and further features include IF shift and tunable notch filters. The IF filter selection system is fully flexible, in the same manner as the TS-440S transceiver, and offers automatic selection by mode, or manual selection according to the operator’s requirements.

**CAPTURE THE WORLD**

ONLY

$1075

A dual mode noise blanker system deals effectively with both impulse noise as well as the “woodpecker”.

Keyboard Frequency Selection

Frequencies can be entered using direct keyboard control, and a frequency lock switch prevents accidental frequency changes from occurring.

100 Memory Channels Capability

100 memories are provided, which store frequency, mode, and which antenna has been selected. Memory information can be scrolled to review contents of any memory channel.

Memory Scan and Programmable Band Scan.

Further memory facilities include memory scanning with programmable memory lockout, and programmable band scanning with centre stop for accurate on-channel tuning.

Plus a full list of other desirable features:
- Dual 24 hour clocks with timer
- Optional VS-1 voice synthesiser for frequency announcement
- Optional control by personal computer using the IF-232C interface
- Lithium battery backup of memory contents
- Built in AC power supply and option to use the receiver on 138 volt DC supplies
- High quality internal loudspeaker
- AGC time constant switchable fast/slow
- Switchable RF input attenuator (0 to 30 dB in 10 dB steps)

To summarise: the R-5000 from KENWOOD offers the operator a top performance communications receiver of the very highest quality, with all the features and functions which the discriminating user could demand.

With the R-5000, KENWOOD gives the dedicated listener a receiver which will match the performance of the very best transceivers available today.
The TS-711A 2-m and the TS-811A 70-cm all-mode transceivers feature enhanced ease of operation through the use of new microprocessor technology that permits the incorporation of the widest range of innovative features in a very compact package. These features include KENWOOD's new, exclusive DCS (Digital Code Squelch), 10-Hz step dual digital VFO's, a new, multi-function fluorescent tube digital display, 40 multi-function memory channels, programmable band scan, memory scan, mode scan, auto mode function, "quick-step" main tuning dial, IF shift, speech processor, all-mode squelch, noise blanker and an easy-to-operate front panel design.

The TS-670 "Quad-Bander" is a unique all-mode transceiver that covers the 6 meter VHF band, and the 10,15 and 40 meter HF bands, combining the ultimate in compact size with advanced circuit design and performance. This outstanding radio may be purchased with an optional general coverage receiver that tunes continuously from 500-KHz to 30-MHz. Key features include dual digital VFO's, 80 memory channels, memory scan, programmable band scan, frequency direct key selection, a two-colour fluorescent tube display with function indicator LED's, IF shift and squelch.

The TR-751A all mode, 2-m transceiver delivers superior performance and "All Mode Mobility". Packed with all of the most often needed features including auto-mode selection, dual digital VFOs, 10 memories plus "COM" channel, programmable CTCSS tone, various scan functions, all-mode squelch, noise blanker, RIT, DCL (Digital Channel Link) and easy-to-operate front panel layout. And, designed with the latest state-of-the-art technology, this compact rig is the one to choose for VHF stations on-the-go.
DIGITAL CODE SQUELCH

TRIO-KENWOOD's new DCS "Digital Code Squelch" is a revolutionary signalling concept for Amateur Radio that utilises current state-of-the-art technology. This new technology is a major feature of all Kenwood new generation equipment. The DCS should not be confused with conventional CTCSS (Continuous Tone Coded Squelch System). DCS uses a 5 digit, digitally coded data string, to open squelch on a receiver that has been programmed to accept this same specific code group. By utilising a 5 digit code group the operator may choose from 100,000 possible combinations, thus providing increased security. In addition to the 5 digit "access code" the DCS also transmits the operators call sign, in decimal ASCII code. Call signs of a maximum of 6 digits may be entered. By using the optional CD-10 Call Sign Display, the operator may store incoming call signs, for later review or logging.

100,000 different 5 digit code groups.

Convenient keyboard entry of the "access code" is possible with all models equipped with the DCS.

Capable of monitoring multiple access codes.

The DCS codes, and call sign data, are stored in separate memory locations within the host unit. This allows the operator to monitor several access code groups at one time. Clubs and nets will find this function useful, as will operators who wish to listen for more than one group at a time.

CD-10

The CD-10 store the call sign of calling station in its memory and displays it on an LCD display. Call signs of up to 20 of the most recently calling stations are stored, allowing the operator to quickly check for and return any call.

DCS Decoding. Decodes the digital ASCII call sign data that is a portion of the DCS data string.

Automatic Call Sign Transmission.

A 6 digit Amateur "Call Sign" is entered into the DCS memory using decimal ASCII coding, by use of the front panel keyboard. This call sign is then transmitted in conjunction with the DCS data string each time the PTT switch is depressed or released. By using the optional CD-10 Call Sign Display the operator can automatically store up to 20 different call signs. This feature is useful for unattended monitoring of the radio. Upon return to the station the operator can review the CD-10 memory to determine who tried to contact him during his absence. This function is also useful for logging purposes.

CALL SIGN DISPLAY SYSTEM $160

INCLUDES FREE AC ADAPTOR

SM-220 STATION MONITOR

VALUE AT $555

The SM-220 station monitor features a built-in two-tone generator for a wide variety of waveform-observing capabilities. An optional feature is a unique panoramic display capability. The SM-220 provides efficient station operation as it monitors transmitted waveforms, and it also serves as a high-sensitivity, wide-frequency-range oscilloscope for various adjustments and experiments.
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$75

Compact and lightweight SWR/POWER/VOLT meters cover 1.8 - 150 MHz (SW-100A), 140 - 450 MHz (SW-100B) in range of 150W full scale for mobile use.

SW-200 A/B
$150

SWR/POWER METER (Supplied With A Coupler).


AT-130
$180

ANTENNA TUNER

The AT-130 is a compact and lightweight antenna tuner designed for base or mobile use. It consists of an antenna coupler, an SWR meter and an antenna switch.

MC-60A $120

MC-60A (8 Pin) Deluxe Desk-Top Microphone With Built-In Pre-Amplifier.

MC-80 $70

MC-80 (8 Pin) Desktop UP/DOWN Microphone With Built-In Pre-Amplifier.

MC-85 $140

MC-85 (8 Pin) Multi-Function Desk-Top UP/DOWN Microphone With Built-In Audio Level Compensation.

RF DUMMY LOAD (20W continuous)
- Impedance: 50Q
- Frequency range and VSWR: DC~500 MHz, 1.1:1
- Input power: 20W (continuous) 50W (intermittent: 1 minute ON, 3 minutes OFF)
- Maximum temperature: 200°C (392°F)
- Cooling: Natural air flow
- Connector: M type connector.

LIGHTNING & STATIC PROTECTOR

AL-1: Handles 100W output at 50Q with SQ-239 Connector.
AL-2: Handles 1 kW output at 50Q with SQ-239 Connector.

LOW-PASS FILTER

- Cutoff frequency: 30 MHz
- Attenuation: More than 90 dB between 90 and 300 MHz
- Durability against input power: 1 kW PEP
- Insertion loss: Less than 0.5 dB at 30 MHz
- Input/output impedance: 50Q

MA-5

80-m/40-m/20-m/15-m/10-m. Five Band Helical-type HF Mobile Antenna.

The MA-5 is a multi-purpose HF antenna for mobile operation.

MA-4000 (500)

2-m/70-cm Dual Band Mobile Antenna with Duplexer.

The dual bander's ability of the TW-4000A can be brought into full operation by combining the MA-4000.

RD-20
$32

AL-1
$40

LF-30A
$53

MA-5
$205

MA-4000
$65

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MB-4000 FOR TW 4000 WAS $16 $10
MB-201 FOR TM 201A/401A WAS $16 $10

SC-3 SOFT CASE – TR-2400 WAS $25 $8
SC-8 SOFT CASE – TH-21A/TH-41A WAS $16 $10
SWC-3 POWER METER COUPLER (1.8 – 54 MHz): Coupler for SW-2000 WAS $50 $30
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YG-455N FILTER FOR TS-830S WAS $158 $80

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MJ-46 4P – 6P WAS $44 NOW $7
MJ-64 6P – 4P WAS $44 NOW $7
MJ-68 6P – 8P WAS $44 NOW $7

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Either by counter sale or mail order ONLY. (please add freight.)
MORE ABOUT A MULTIBAND END-FED INVERTED-VEE AERIAL SYSTEM

Written by Colin Dickman ZS6U
Reprinted from RADIO ZS, January 1978 and contributed to AR by James Crichton VK2XFC

The aim of this article is to provide a summary of the article published last month and to expand on some of the details therein.

By using a wire two wavelengths long at 10 metres, a very simple band-switched L-network matching unit can be used to preselect 10, 15, 20, 40 and 80 metres, quickly and reliably.

The system is preadjusted to provide a purely resistive load to the transmitter. Unlike other multiband systems there is no reactance present to cause loading difficulties accompanied by RF in the shack, BCI and like problems.

There are no transmission line losses, consequently all of the RF from the transmitter is radiated by the antenna.

By using lobe alignment, the antenna yields useful directivity and gain over a dipole or vertical, especially at the higher frequencies.

On reception, the antenna has a greater capture area at the higher frequencies than a dipole or vertical. In addition, the L-network provides a degree of selectivity. The two together result in a stronger, cleaner signal.

The two-wavelength version requires less than 14 metres of ground space.

The length of the wire is obtained from the formula:

\[ L \text{ metres} = \frac{984 (N - 0.0125)}{f (\text{MHz})} \times 0.3048 \]

N = Number of wavelengths at the highest frequency.

For example, for two-wavelengths at 28.6 MHz, \( L = 20.84 \) metres. This is the overall length of the wire right up to the antenna terminal of the L-network.

The circuit diagrams for L-networks for two and four wavelength antennas together with coil taps and dimensions are shown in Figures 4 and 5. The preadjustment procedure is to insert a SWR bridge in the coax between the rig and the L-network, switch it to the reflected power position and, using sufficient carrier on 40, 20, 15 and 10 metres in turn, adjust the capacitor C for the lowest dip in the meter reading. With the two-wavelengths system there is no tuning on 80 metres and capacitor C is merely set to minimum capacity. With the four-wavelength system, the adjustment procedure for 80 is the same as for the other bands. Mark each band setting of capacitor C on its dial so that band changing merely involves switching the bandswitch and turning C to the calibrated mark for that band before loading up the rig.

<table>
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Table Figure 4.

Figure 1 depicts the standard ZS6U Mini-shack Special, which is two-wavelengths long on 10 metres and a quarter-wavelength on 80 metres. In this configuration, the change in direction of the wire at the apex splits the antenna into two one-wavelength sections. Starting with the 50 degree lobe angle of a one-wavelength antenna in free space, the wire tilt, apex angle and height can be derived. The two pairs of horizontal lobes tend to reinforce to produce low angle, bi-directional radiation along the.

For greater detail, readers are referred to the previous article.

MORE ABOUT WIRE CONFIGURATIONS

Having stretched and cut your measured piece of wire, you will be looking for some way to string it up. The simplest way may be to use an L-shape or you may need to take the wire in various directions to get it in the clear. Although all the power you put into this antenna will be radiated irrespective of the wire shape, random shapes will not do full justice to the fine performance potential of the antenna. There are certain preferred configurations which will put the signal where it will do the most good.

Be assured that the extra effort will be well worthwhile.

The principle of lobe alignment has been used in the three recommended configurations shown in geometric form in Figures 1, 2, and 3 to achieve useful gain at low wave angles. Using the formula and example above, two wavelengths = 20.84 metres and four wavelengths = 41.82 metres.

Table Figure 5.

Figure 4.

Figure 5.
plane of the wire. As with all end-fed antennas, the lobe amplitude in the free end direction exceeds the reverse lobe due to progressive radiation loss along the wire. The gain due to the two-wavelength wire which is about 1.5 dB, is added to the gain from lobe reinforcement, which is about 3 dB to provide a total gain of about 4.5 dB in a wide beam at a vertical angle of less than 10 degrees in the direction of the open end of the wire. The theoretical patterns are shown in the accompanying vertical and horizontal — plane diagrams for 10 metres. On the lower frequency bands, the lobes become progressively mis-aligned resulting in higher angles of radiation with less directivity and gain.

Figure 2 is the full size Z36U Special which is four-wavelengths long on 10 metres and a half-wavelength on 80. Here the tilt angle is 35 degrees resulting in a triangle having a height of 12 metres. If the dimension, which represents the height at which the wire is connected to the L-network, is taken to be 1.5 metres, then the pole height would be 12 + 1.5 = 13.5 metres compared with 9.5 metres for Figure 1.

Due to the larger dimensions, the gain of this configuration is about 6 dB on 10 metres with a somewhat narrower beamwidth than Figure 1. As long as the full height is used the performance on the five bands is marginally better than the mini-version by about 1.5 dB on each band. If the best possible performance is desired on 80 metres, this is the version to use. It requires the L-network shown in Figure 5.

The lobe alignment principle for low wave angles is also employed in Figure 3, which is half of the inverted-Vee of Figure 2, having the same tilt angle and height, but using only two-wavelengths of wire. As the polar diagrams indicate this version is less desirable than Figures 1 and 2, but is preferable to a straight wire or a random shape. Apartment dwellers please note that this version may be used sloping downwards at the angle shown with good results. You will need to be on the fourth floor or higher.

**METAL OBSTRUCTIONS**
The near side of the wire is at high impedance on all bands and should therefore be insulated and kept as far as possible from metal obstructions such as metal window frames, gutters, cables, etc. For example, it is not a good idea to close a metal-framed window, etc with the wire clamped between the metal parts. Ideally, the near side of the wire should be secured to an anchor insulator and then should enter through an air brick or wooden-framed window. If a metal-framed window is the only entry point, a small hole should be drilled in the centre of the glass pane (or plastic sheet replacing the glass).

The support for the apex of the antenna should preferably be a wooden pole guyed with nylon rope or metal wire, broken up by egg insulators. In certain cases, where there are two suitable high points on either side of the antenna plane, they can be joined horizontally by nylon rope and the antenna wire thrown over the rope to form the apex.

If a metal pole is used, it is best to shift it two or three metres to one side so that it does not lie precisely in the vertical plane of the antenna. The resulting slight tilt in the plane will have little effect on the performance.

**MORE ABOUT ORIENTATION**
All three configurations described show decided gain in the direction of the free end of the wire and should therefore be erected pointing in the desired direction. If space allows, two antennas may be erected at right angles and switched alternately to the L-network antenna terminal by means of a porcelain insulated knife switch. Little is to be gained by joining two such antennas together as the power in
each would be halved. The impedance at the feed point would also be halved, upsetting the matching of the L-network.

MORE ABOUT THE L-NETWORK

Figure 4 shows the network for two-wavelength antennas of the sort shown in Figures 1 and 3. Figure 5 is the network that must be used with the antenna of Figure 2. The network of Figure 4 can also be used with wires of 8, 12, 16, 20, etc wavelengths for the adventurous experimenter. The lengths above are given for 10 metres as this is the highest frequency we have been considering, but there is no reason why, using the information given in the original article a system should not be adapted for six or two metre inverted-Vee antennas.

One of the problems facing builders of the original L-network was that I used a piece of 35 mm OD polyethylene tubing for the former and based my coil data on that. Well there is a way for you to use the same number of turns and the same taps with a different diameter former. I devised the following formulae to represent the given length of winding and diameter of coil, and L₁ and d₂ represent the new length and diameter:

\[ L_2 = L_1 \cdot \frac{d_2^2}{d_1^2} + \frac{V}{e(d_2 - d_1)} \]

The formula is accurate over a 1.5:1 range. I have worked out a set of values for three and one for both networks, which are presented together with Figures 4 and 5. For example, if you use a coil diameter of 38 mm for the network of Figure 4, you must spread the 20 turns evenly to occupy a winding length of 47 mm. The maximum wire diameter given in this case, 1.17 mm is derived from a spacing between the turns equal to the wire diameter. Use the nearest smaller standard size. An air wound coil has the lowest losses, but if you use a former make sure it has a reasonably lower power factor at 30 MHz. The switch is of the ordinary single-pole, five- position, wafer variety and the condenser should have a spacing of at least 0.5 mm between the plates, otherwise arcing may occur. Enclose the unit in a plastic box. If a metal box is used, the coil should clear the metal by at least 25 mm on all sides.

I must emphasise that the L-network must be looked upon as the equivalent of a quarter-wave transmission line and that resonance on each band (and therefore pure resistive load) is indicated by a dip in reflected power reading. These dips should be found once and the condenser so calibrated for future operating. If you insist on leaving your SWR bridge permanently in the coax, then there are a few words of advice. As amateurs are invertebrate experimenters it will not take long to discover that if you fiddle with the L-network condenser while tuning up (contrary to instructions) you may find the setting to one side of the correctly marked setting which gives a higher reading on the "forward power" scale of the SWR bridge. You are about to fall into the trap of believing that you have discovered a way to radiate more power. But alas, in reality the higher reading is due to undesired reactive voltage being added to the desired resistive voltage. The moral is: interpret SWR meter forward readings with caution.

MORE ABOUT THE TWO-WAVELENGTH ANTENNA ON 80 METRES

Some constructors have had difficulty loading on 80 metres. On this band the antenna is a quarter wave long and an earth is essential for its operation. As with any quarter wave antenna, every metre of earth lead adds to the overall length of the antenna system. If your earth system is so unsuitable that the antenna will not take power on 80 metres, there are three ways of handling the problem.

a) If the earth lead is about five metres long, or less, use a variable condenser of about 300 pF, with about 0.5 mm plate spacing in series with your antenna wire to cancel out the inductive reactance thereby electrically shortening the antenna. Set the condenser for minimum reflected reading in the SWR bridge. This condenser should be shorted out during operation on the other bands.

b) Use can be made of the property of a half-wavelength of wire to repeat at its near end the conditions that exist at its far end. Choose an earth point sufficiently far away to accommodate about 39 metres of earth lead, the far end of which is then soldered to the earth point. Use insulated wire because the centre of the halfwave will be at RF potential above ground. By varying the length of this lead, the antenna can be brought into exact resonance.

c) Use can be made of the property of a quarter-wavelength of wire to act as an inverting transformer. Take a piece of insulated wire about 19 metres long, connect one end to the earth terminal of the L-network and leave the far end free. The excess wire may be stapled around the skirting of the shack or hung out of the window or trailed along the ground, but must not be grounded. As in (b), above its length can be trimmed to provide exact resonance. It should be noted that with this method an additional electrical earth must be provided to the rig for lightning and mains protection. If the protective earth connection upsets the antenna resonance, connecting an RF choke in series with it consisting of a close wound single layer of PVC insulated wire on a 10 or 15 mm ferrite rod to isolate it from the RF earth. In any case, it is good practice to use such a choke, especially when the mains earth is used to reduce RF interference with your neighbours.

Here's wishing you an outstanding signal!
An OBLIQUE VIEW OF LC OSCILLATORS

Watt for watt, those ancient cycles would travel as far as modern transmitters now send them.

It has always struck me as being a bit off the mark to discuss the operation of LC oscillators in terms of 'when the base (or grid) goes this way the collector (or anode) does this or that and tickles, pushes or pulls or whatever maintains oscillation.' Invariably each type of oscillator requires a different explanation. All perfectly valid of course; but isn't it rather like putting the cart before the horse? After all, LC circuits were oscillating quite happily long before the days of valves and transistors. As man has always travelled, moved from A to B, so LC circuits have always been capable of oscillation; like bells do ring. Where man can accomplish his transposition in an LC circuit, or a precise frequency determined by

\[ f = \frac{1}{2 \pi \sqrt{LC}} \]

is the thing. How sustained oscillation is accomplished seems secondary. This view is supported by the inordinate number of devices and circuits designed to do it. There is no one way. Only the LC circuit itself retains its originality and does what it has always done. Why doesn't it oscillate continuously? Why doesn't a bell ring forever when hit with a hammer? Because of metal stress and heat losses, air resistance and support damping losses. It takes energy to do things; once that energy is dissipated there is no more.

The losses in an LC circuit are coil resistance (including skin effect at high frequencies), capacitor dielectric resistance (leakage) and dielectric absorption. (Ever had a belt off a television picture tube hours after it had been discharged?)

Tuned circuit losses, the cause of oscillations being 'damped' as energy passes back and forth between coil and capacitor, may be lumped into a single equivalent resistance value. To press home my point, that active devices are secondary in oscillator circuit explanation, is the fact that by introducing an equal amount of negative resistance into the circuit, the cause of damping is removed and sustained oscillation takes place. Series- wise, R = zero. It no longer exists. The tetrode valve may be used to provide the negative resistance. Due to secondary emission, the anode characteristic has a negative resistance region. As the anode potential is increased the anode current decreases, (over a portion of the curve). See Figure 1.

If a parallel tuned circuit is placed in the anode circuit, and the anode voltage adjusted to point X (on the curve), oscillation will occur. Ah! you may exclaim, but you have used an active device! Alright! Then I will use a diode. A tunnel diode, that is surely passive. See Figure 2.

At 0.55 volts my circuit oscillates continuously. Get the point? All that is necessary is a means of adding or introducing into the LC circuit sufficient negative resistance to cancel the resistance of the tuned circuit. What about power oscillators you may ask? Oscillators used to drive power amplifiers. Surely power must be provided by the active device. Sure it is, in the right form and at the correct timing but it originates from the power supply; as it does in the tunnel diode oscillator. And, because taking power from an oscillator results in increased equivalent series resistance in the LC circuit, reduced Q factor, more negative resistance is required and is provided by a harder working active device.

Figure 1.

Figure 2.

So whatever type of LC oscillator you come across, think first 'Tuned Circuit, Resistive Losses,' then 'source of negative resistance and how introduced.'

I did mention that this was an oblique approach, but it is worth a few moments thought.

SPECIAL CONDITION

As many amateurs are aware, the Department of Communications (DOC), at present, allocates frequencies within the 576-585 MHz band for amateur television repeater transmitters. However, this is done on the basis that amateurs may employ the band until such time as it is required for use by the broadcasting service, around late 1987.

To give amateurs ample warning, all new and reissued amateur television repeater licenses in the band 576-585 will include special condition 54, which states:

Future assignments for this frequency band are currently under review and licensees may be required to change frequency or to cease transmission completely, when this review is done.

Signed: J Higginbottom
Manager Licensing
Operations Branch
Department of Communications
A SQUARE WAVE GENERATOR

Part Two

Ken Kimberley VK2PY
21 Nicoll Street, Lakemba, NSW. 2195

Last month, Part One of this article described the theory of operation and design of a phase-locked, variable frequency square wave generator. Part Two looks at the construction and testing of the unit.

Firstly, to the metal bashing.

The unit was squeezed into a Norwood case, type number B4/10/V, purchased from Dick Smith Electronics, Catalogue Number H2455. Actually, there was sufficient space inside the case, but the front panel is a little on the small side for my liking.

A scrap of aluminium sheet, sized 160 x 150 x 1 mm was obtained. This was then fitted, by means of angle brackets, 30 mm up from the bottom of the case. Mount it flush with the rear wall, leaving a clear gap behind the front panel to give access to the switches and their associated wiring — thus forming what we OTs used to call a chassis.

Next came the front panel layout, details of which are shown in Figure 8. The sizes shown suit the components used by the author and may require alteration to suit those used by the individual.

After making all of the holes, check your handiwork by temporarily mounting the switches, etc. Satisfy yourself that everything fits as intended and nothing has been missed. If all is well, remove and store these parts.

The next stage is painting the front panel. Proceed as follows.

Firstly, remove the sheen by rubbing the aluminium with some steel wool and a little elbow grease. This provides a surface to which the paint will adhere more readily.

Now, using a paint pressure pack, spray on the primer, followed by two coats of your favourite coloured enamel. Be sure to follow the paint manufacturer’s directions carefully, especially in regard to time between coats.

Label as desired and a coat of clear lacquer will complete the embellishment. Engraved dial knobs (Cat No H3770) were used for the decade frequency selector switches, thus considerably reducing the artwork required.

Modular Construction was used for the electronics. Four individual boards were used, five if the crystal oscillator is counted. Boards One and Two are on the top-side of the chassis and run parallel with the front. They are mounted to the extreme left and front so as to leave enough room for the power supply and oven. Three and Four are placed on the bottom, immediately below One and Two.

In the interests of brevity, power supply and board mounting, etc will not be detailed. The following items are on the rear panel:

- Mains Input Grommet
- Fuse
- 12 and 15 volt Regulators
- SO239 Coaxial Socket for the External Drive Input.

The top side of the chassis carries boards One and Two, power transformer, mains terminal block, 3000 uF electrolytic capacitor and, of course, the reference oscillator. The underside has boards Three, Four and the bridge rectifier.

The Wired PLL Board.

Having drilled holes for the above, mount and wire the power supply components. Carry out the “smoke test” and if all is well 12 and 15 volts will appear at the output lugs of the two regulators.

ELECTRONICS

The main electronics are built onto four hard wired DIL boards (Cat HS602). The contents are itemised below and are enumerated from left to right:

- NUMBER ONE. The VCO — Figures 4 and 9.
  a. TR2 (BC108 or similar) “Lock Indicator” drive.
  b. TR1 (BC108 or similar) TTL to 12 volt CMOS converter.
  c. IC13 4013 Symmetry correction/Divide by 2.

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b. TR4 (BC108 or similar) External 10 MHz Shaper/Amp.
c. IC5 7404 CMOS to TTL, plus buffers for items (a) and (b), as well as spare.
d. IC1 74LS90 Divide by 10 to 1 MHz.
e. IC2 4518 Dual divide by 10 to 10 kHz.
f. IC3 4518 Dual divide by 10 to 100 Hz.
g. IC4 78L05 Five volt regulator.

NUMBER FOUR. Down Range Extender — Figures 5 and 12.
Contains four integrated circuits.
a. IC16 4017 Divide by 10.
b. IC17 4017 Divide by 10.
c. IC18 4017 Divide by 10.
d. IC19 4017 Divide by 10.
Total available division is 10 000.
The same method of construction is used for each board, and to avoid being repetitious, the construction of number one will be detailed here.
Free use is made of "circuit test pins (Cat No H5590) and are shown thus * on the circuit diagram. They are used for transistor connections, power supply feed, all buffer inputs and outputs (used or not) signal in and out for each IC, and other points as and when required.

Sockets are provided for all DIL integrated circuits and are the first items soldered into the boards. Next comes the supply lines, positive along the top whilst the negative runs along the bottom. Solder lugs are organised so that their holes coincide with the board mounting holes and are positioned so that they may be soldered to the earth pins.
Now run the IC earth leads, using bare tinned copper wire and/or any convenient tracks. Likewise, the inter-connection links, not forgetting the Vcc (positive) supply, and then followed by the inter-chip wiring using insulated wire. Wherever possible wiring is run along the upper surface and soldered underneath, or to circuit pins.
Earth the unused buffer inputs (not outputs), fit resistors and capacitors.
Before going further, inspect your work under a strong light. Remove possible shorts and resolder any dubious joints. When completely satisfied, take wire in transistors and the 78L05 regulator.
The IC pin spacing must now be adjusted to suit that of the socket. This is done as follows:

Hold the chip firmly using both hands, press down firmly against the bench top, and tilt the IC slightly. The opposite side is treated the same way. Carefully does it are the operative words here. Better to have two or three attempts than to finish with mangled pins.

Now carefully insert the chips into their sockets, making sure that you have them polarised correctly. The board is now complete and ready for use or further wiring. If any joints are uncertain, mount it into its appointed space on the chassis. Maybe it would be prudent to make one final check? It is surprising how simple errors creep in when one is in too much of a hurry. My advice is not to hurry as there is always another day!
The remaining boards are handled in a similar manner, complete but do not, at this stage, mount board four.
Run the 12 volt supply to each board in turn, followed by the few inter-board connections and then the four wires to the "Lock" indicator. Do not fit, at this time, any switches, etc except the power ON/OFF one. Their absence, together with all of the associated wiring, gives a lot more "elbow room" during preliminary testing.

TRIAL RUN
Run five temporary connections from the summing gate to the programmable divider:
the installation of the five decade frequency selector correctly if one has been missed. Having arrived at the stage of having the unit off from the unit and arm yourself to the inter-board wiring. Remove the offending board from the unit and arm yourself to the inter-board wiring. Remove the temporary wire No 5, then connect the 10 wires to their assigned places. Ten go to IC12 (4017) and the 11th goes to pin 2 of the summing gate.

Verify your work by connecting the counter and rotate the switch from zero through to nine. The output frequency should increment from 1,500,000 Hz 100 Hz steps. The process is then repeated for the remaining four switches. Note that the X 1000 is a two-pole, four-position type. Section "a" is wired to pins 3, 2, 4 and 7 of IC8, corresponding with frequencies of zero, one, two and three megahertz. The "B" pole is used to switch-in extra capacity to the VCO circuitry to allow operation down to 100 Hz in the "0" MHz position.

Considerable jitter creeps in at the lower frequencies and is reduced by introducing an extra 1.5 nF capacitor via the "LF" switch.

Fault Finding

Failure to lock indicates a wiring error or a faulty component. Fault finding with a CRO is relatively easy, however, for those without a CRO it will be much more difficult. Don't despair as many checks may be made using your receiver, and/or multi-meter. Use your receiver to verify that the clock oscillator is running and then that the divider board is producing the correct frequencies. If this is happening Boards Three and Five are clear.

The programmable divider may be tested as follows:

A little extra wiring is required, all of which is temporary and is merely to enable one to assess the operation of this board. Disconnect the reset line and tie to 0V. Re-route the divider input to the TR1 collector and then connect the level converter (TR1) to the 1 MHz output of Board Three. A capacitor and diode detector will allow the use of the multi-meter as a signal tracer. If you are satisfied that Board Three is counting then the fault must be either in Board One or the inter-board wiring. Remove the offending board from the unit and arm yourself with a copy of the circuit. Remove all ICs. Now check for unintentional shorts between every chip connection. Then test the circuit through, step by step. Ensure that every earth shown on the diagram has been made. Some of the ICs use multiple earths and will not operate correctly if one has been missed.

Decade Switches

Having arrived at the stage of having the unit "up and running," attention is now directed to the installation of the five decade frequency selector switches. They are fitted and tested, one at a time. Due to the limited space inside the case, it was found easier to pre-wire them before assembly onto the front panel. The use of different coloured wire makes for easier sorting at the board end. The author used wire which matched the standard resistor code. Rainbow flat cable is an easy way to obtain such an array of colours.

Commence at the 100 Hz end and fit the switch. Remove the temporary wire No 5, then connect the 10 wires to their assigned places. Ten go to IC12 (4017) and the 11th goes to pin 2 of the summing gate. Verify your work by connecting the counter and rotate the switch from zero through to nine. The output frequency should increment from 1,500,000 Hz to 15009 Hz in 100 Hz steps. The process is then repeated for the remaining four switches. Note that the X 1000 is a two-pole, four-position type.

Section "a" is wired to pins 3, 2, 4 and 7 of IC8, corresponding with frequencies of zero, one, two and three megahertz. The "B" pole is used to switch-in extra capacity to the VCO circuitry to allow operation down to 100 Hz in the "0" MHz position.

Considerable jitter creeps in at the lower frequencies and is reduced by introducing an extra 1.5 nF capacitor via the "LF" switch.

Final Adjustment

This may be accomplished using the station receiver, however, a counter and CRO will make the exercise a little easier.

Proceed as follows:

1. Turn TC1 to maximum C.
2. Set SW1 to "3" and switches 2 through 5 to "0." The "Lock Indicator" will most likely not be "On" or it may flicker.
3. Tune the receiver to 3.0 MHz.
4. Slowly tune TC1 towards minimum. A point will be reached where a strong signal will suddenly appear on the receiver and the "Lock" will settle to a steady glow.
5. Leave SW1 at "3" and set SW2 to "5" (3.5 MHz).
6. Retune the receiver to 3.5 MHz and repeat step 4.
7. Repeat at 100 kHz intervals until maximum lockable frequency is reached.
8. Turn SW1 to "1" and all others to zero. Check for lock and 1 MHz signal on your receiver.
9. If okay, rotate other switches to 9999 and verify frequency. "CX" will need to be reduced if unable to reach 1.9999 MHz.

Low Range Frequencies

1. Set SW1 at "0" and "LF" to OFF Use "Counter" to check output frequency at all switch positions.
2. Connect CRO to output. "Jitter" should be apparent on the waveform at frequencies below approximately 100 kHz.
3. Switch "LF" on. The "Jitter" should now stop. If still evident, increase the 1.5 nF capacitor slightly. Do not use more "C" than required.

Future Plans

These include substituting a XR2206 chip in lieu of the 4046s VCO section. The idea here is that sine, square and triangular waveforms would then be obtainable.

Then, of course, a low impedance emitter follower feeding into a calibrated switchable attenuator, and maybe an output meter could be considered.

Alternatively, one could stay with the square wave only configuration and use a 74 HC 4046. This IC utilises 3.5 μ silicon gate p well technology to obtain high frequency operation. It is specified to give a typical frequency of 18 MHz with a VCC of six volts.

Heavens, quickly secure the lid, before any more possible features (and more work) are thought of.

A full Parts List has not been prepared for this project, however most of the hardware items come from Dick Smith Electronics stores. These include the power transformer, case, sockets, circuit pins, DIL boards, knobs and toggle switches. The semi-conductors were purchased from Rod Irving Electronics. Minor components were obtained from various other suppliers, including the "good-old Junk Box."

Thanks are extended to Mrs B Brown for typing this article.

References:

1. 10 MHz Temperature Controlled Oscillator, Amateur Radio, September and October 1986.

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### Latest range of Yagi Antennas from RF Aerospace

<table>
<thead>
<tr>
<th>Type</th>
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<td>A. D-4700</td>
<td>2m, 8-element Cat D-4700</td>
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<tr>
<td>B. D-4701</td>
<td>70cm, 18-element Cat D-4701</td>
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<td>C. D-4702</td>
<td>6m, 4-element Cat D-4702</td>
<td>$59.95</td>
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#### Verticals too!

- D. D-4704: $59.95
- E. D-4703: $59.95

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- **2-in-1 value! 2m and 70cm**
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    - **PRICE: $799**
    - **WAS: $1199**
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    - **PRICE: $595**
    - **WAS: $959**

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### All Specials One Month Only or While Stocks Last
Ten years ago, hand-held transceivers had established their place in amateur radio. They had limited channel capacity and their features were limited.

Icom have now released a 1296 MHz hand-held radio with all the features of their 144 MHz and 432 MHz hand-held radios. Just to have produced such a transceiver is quite an achievement. The performance of the transceiver is better than that of many fixed stations of 10 years ago. Hand-held radios have certainly evolved during the last 10 years.

The IC12 is a very highly developed hand-held transceiver. None of the features of Icom's other hand-holds are lacking. The IC12 comes with a complete range of memories, scanning, priority, call channel, tones and repeater operation.

Usage of the 1296 MHz band presents a problem in testing equipment on air. However, with two units to test and the assistance of home stations, the capabilities of the IC12AT were assessed.

When first delivered, there were some qualms about the safety of use of the hand-helds. This is not peculiar to these hand-helds, but applies to any hand-held transceiver. The critical factors are the power radiated, the length of the aerial, and the distance from the operator. A higher powered hand-held with a short aerial can approach the limits for exposure to electromagnetic radiation.

Calculation of the likely electromagnetic radiation from the IC12AT indicated that it would be well below 10 mW per square centimetre under normal operation. This was later confirmed by direct measurement using an RF Radiation Monitor.

Performance measurements at 1296 MHz require relatively sophisticated test equipment. In order to obtain the figures shown, the two hand-held radios were passed to Kevin VK3AUQ. The results are shown in Figure 1.

The performance obtained is very satisfactory and is remarkable from such a small radio. The transceivers were operated from battery packs, so the performance is the actual performance obtained in use.

### Figure 1 — Receiver Sensitivity.

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<th>S/N 01098</th>
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<td>1280</td>
<td>1299</td>
</tr>
<tr>
<td>Mute opens</td>
<td>.08 μV</td>
<td>.07 μV</td>
</tr>
<tr>
<td>SINAD 12 dB</td>
<td>.23 μV</td>
<td>.19 μV</td>
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<tr>
<td>Distortion at 500 mW</td>
<td>76%</td>
<td>5.3%</td>
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<td>Distortion at 50 mW</td>
<td>6.8%</td>
<td>3.3%</td>
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<tr>
<td>Receiver Current Muted</td>
<td>82 mA</td>
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<tr>
<td>Receiver Current Full Audio</td>
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<td>Spur 2nd Harmonic</td>
<td>-50 dB</td>
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<td>Frequency (Ambient 20 degrees Celsius)</td>
<td>1.8 kHz Down</td>
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<td>Transmit Current High</td>
<td>11 A</td>
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<td>Transmit Current Low</td>
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</table>

Battery consumption done with 12 volts external and battery pack removed.
Packet radio is unique to amateur radio. I read in a recent newspaper article that amateur radio operators in England have what they call the "vendex of elements," presumably because the hobby is generally solitary. Until packet radio came along, amateur radio consisted mostly of individual operations. You could not get your voice heard or message through with 50 watts, even, crank up the power or turn the antenna. There was very little cooperation on the amateur bands. And when it was, a few could (and can) mess up everything. Packet changes all of that. With a well-designed communications protocol, we could see that it could be a great idea, which it is. Without a lot of co-operation and goodwill, our fragile network of digipeaters will simply stop working. That is why the very first stations that I talked to were to the western slope and on to Utah, and theoretically to California, is such a remarkable feat. California has W6AMT, with 12 or so digipeaters hooked up to call sign to form the backbone of WESTNET. The east coast has many amateurs who can get together to buy and put up a digi here and there.

We have some wonderful sites, but darned few people and even less money; but with what we have we have built a successful 2.5 watt link between Denver and Salt Lake City. Now that the sites are there, and people are using the strange technology, new ideas are happening. The 152 MHz, will be ready when True Level 3 networking comes, with higher speeds and better channel utilisation. Until that happens, though, we are playing with the frequency and power that works—sometimes. Here is some information on the Colorado portion of the link, and to the extent I know about it, the people who helped put the digipeaters up: NOBRI-1 is the first link in the chain. It is located on Santoy Mountain, near Kremmling, several miles from the Kremmling VOR, a well-known navigation point. Since it was located approximately 75 miles (120 km) west of Boulder, it is the base to be easy to hit it—but the continental divide is in the way! However, K0ZCO (another don't name) on the western slope and W0JXH in Greeley have been able to work this digipeater consistently. The digi was installed earlier this year by NOBRI, whose name in the call book is Louis, but everyone calls him Sunshine. He lives in Eagle, and is an electrician in Vail. The digipeater runs 25 watts and uses a Kantronics TNC. Ironically, Sunshine cannot work his digipeater from his house. It also does not hit Vail, and Sunshine and Phil W0KEA, will probably install another digipeater on Bellamy Ridge, between Eagle and Vail so that Phil can use the packet. The Eagle/Vail amateurs have been very active in the use of packet to exchange golf scores and other messages. The Eagle/Vail amateurs have been very active in the use of packet to exchange golf scores and other messages. The Eagle/Vail amateurs have been very active in the use of packet to exchange golf scores and other messages.

The only person to reached on this digi is Gary NB7G, who has had a packet digi in Vernal, Utah for 16 months and nobody to talk to. There is another digi in central Utah, 25 miles (40 km) north-west of Price in Boulder Reservoir. It is K7YKG-1, alias BLUE. This provides a reliable link to Snowbird, a mountain near Salt Lake City, at an altitude of 10,000 feet (3000 m). The digi is in the same building as the K0CL 07/67 repeater, and consists of an old Motorola Moxy single-channel rig running 18 watts or so, and a CQ 8000B transceiver. The station has a very "tender of elements," probably because the hobby is generally solitary. Until packet radio came along, amateur radio consisted mostly of individual operations. You could not get your voice heard or message through with 50 watts, even, crank up the power or turn the antenna. There was very little cooperation on the amateur bands. And when it was, a few could (and can) mess up everything. Packet changes all of that. With a well-designed communications protocol, we could see that it could be a great idea, which it is. Without a lot of co-operation and goodwill, our fragile network of digipeaters will simply stop working. That is why the very first stations that I talked to were to the western slope and on to Utah, and theoretically to California, is such a remarkable feat. California has W6AMT, with 12 or so digipeaters hooked up to call sign to form the backbone of WESTNET. The east coast has many amateurs who can get together to buy and put up a digi here and there.

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AMATEUR BANDS BEACONS
FREQUENCY
50.010
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50.075
50.109
52.013
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52.325
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144.400
144.410
144.420
144.430
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144.480
144.485
144.550
144.565
144.600
144.800
144.950
145.000
432.057
432.160
432.410
432.420
432.440
432.450
432.535
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1296.171
1296.420
1296.480
10300.000
1

2

CALL SIGN

LOCATION

JA2IGY
KH6EQI
VS6SIX
JD1YAA
P29BPL
FKBAB
ZK2SIX
VK0SJ
VK8VF
ZL2VHM
ZL3MHF
VK6RTT
VK2RHV
VK6RTU
VK7RST
VK2RSY
VK2RGB
VK4RTL
VK5VF
VK6RPH
VK6RTW
VK7RNT
VK8RAS
VK6RBS
VK4RBB
VK1RCC
VK2RSY
VK3RTG
VK6RTW
VK8VF
VK8RAS
VK5RSE
VK6RPB
VK6RTT
VK5VF
VK2RCW
VK6RPM
VK6RBS
VK6RPR
VK6RTT
VK2RSY
VK4RBB
VK3RAI
VK3RMB
VK4RAR
VK6RBS
VK2RSY
VK6RPR
VK6RVF

Mie
Honolulu
Hong
Kong
Minami
Tori-shima
Loloata
Island
Noumea
Niue
Macquarie
Island
(Keyer)
Darwin
Manawatu
Hornby
Wickham'
Newcastle
Kalgoorlie
Hobart
Sydney
Gunnedah
Townsville
Mount
Lofty
Perth
Albany
Launceston
Alice
Springs
Busselton
Mount
Mowbullan
Canberra
Sydney
Glen
Waverley
Albany
Darwin
Alice
Springs
Mount
Gambier
Port
Hedland
Wickham>
Mount
Lofty
Sydney
Perth
Busselton
Nedlands
Wickham'
Sydney
Brisbane
MacLeod,
Melbourne'
Mount
Buninyong
Rockhampton
Busselton
Sydney
Nedlands
Roleystone

Correction to location — my original report last
April was correct. A note in the North West
Amateur Radio Society Newsletter for October
1986, which says about the location... "All
was fine until August 1986, when the WA VHF
Group got in on the act and told everyone the
beacons were now at Port Samson (Karratha),
that is pretty close I suppose, only 60 or so
kilometres apart. Then comes September AR
and it was in Karratha!" The correction has
been noted and the listing changed as from
this issue. Will the WA VHF Group also please
note for their list.. VK5LR
A further note from Ian VK3AQU, advises the
need to correct the frequency of his 70 cm
beacon from 432.475 to 432.450 MHz. This
has been duly changed this month, also. Plans
are in hand to raise the power level from the
present one watt to the maximum of seven
watts as allowed under his licence.

THE NORTH-WEST

From the North West Amateur Radio Society
Newsletter comes the news of some exciting two
metre contacts. On September 10, 1986, from
1200 to 1255 and on September 11, around 1545,
contact ' was established between
Dougall
VK4KUY/6, on Koolan Island and the Darwin
Channel 8 Repeater and stations worked included
VK8s ZWM, LM, Dl, ZED, PC, KJJ, and TA.
Dougall made the contacts with 30 watts to a nine
element Yagi. The distance is about 900 km. This
appears to be the first time such contacts have
eventuated.
Page 26 - AMATEUR

RADIO, December 1986

Also a first was the tw&way contact between
Brian VK6AIH, in Port Hedland and Ron VK6UF=
on Koolan Island on two metres, the distance
being about 750 km. Contacts with Ron should be
easier now that he has lifted his power to 200
watts.
Repeater VK6RCA, at Carnarvon is operational
with 146.075 input and 146.675 MHz output and is
being looked after by Jim VK6CA. Tests were to be
carried out in October from the Carnarvon Lighthouse, which is a tower more than 30 metres high,
right on ttie coast and, if successful, should suit
ducting up and down the coast.
A new operator on six metres in Port Hedland in
Peter VK6BB, who has 100 watts to stacked Yagis
and is keen to see the Es season start. Pertiaps he
will not have to wait too tongas Dave VK6YA, had
a short contact with JH8MQZ/5 on 52.050 at 0830
on September 12. The JA also reported hearing
the VK6RTT beacon quite well.
It Is good to see the measure of activity taking
place in the north-west, as area nicely situated for
contacts to Indonesia, when conditions permit. It
is noted that regular use Is being made of the
various repeaters to give indications of ducting.
It is of interest to note that the Newsletter is sent
to 29 amateur operators In the area above
Geraldton. How many are actually operating on
VHF is not known, but It does Indicate an area of
considerable amateur interest and VHF operating
does seem to be on the increase there.

THE BRAID-BREAKER

From the same newsletter is some information
said to assist In curing the ills of television and
VCR interference. The source of information is
from the RSGB Television Interference Manual
and the diagram of the "Faraday Double Loop TV
Receiver Filter" is shown herewith and may assist
those who are being troubled.

M
(a)
lOCDf * INNER COMOUCTOg
TO SCREEN AHO CWU WITH TAFC
Jt

Figure 8.4 — Faraday double loop TV
receiver filter, (a) Basic arrangement of
filter; (b) detail of one loop; (c) two identical
loops are put together, taking care to insulate all wires/screens and taped or laced
firmly.
EME ACTIVITIES
Doug VK3UM, advises conditions have not been
too good lately but the following have been some
of his random contacts: 26/7 — 1345 UTC N4GJV
received 43 sent 45; 2245 SM4IVE 349 339; 2307
DF3AU 459 459; 2330 DL9KR 559 449.
On 7/9 at 0730, ZS6JT 0 reports both ways
despite the 30 foot (9m) dish at the other end,
conditions were lust so poor. 26/9 2300 OE9HHV
M reports; 2330 SM7GEP 0 reports; 27/9 0000
DKONA 0 reports; 0020 DF3RU 339 339; 0030
HB9SV 439 439.
Compounding problems in the VK3UM shack
was a king-size flame-out of the 4CX250B linear
with both valves ruined. This occurred whilst

Roger VK5NY, was making a State Visit, so
naturally he receives the blamel VK5LP sent over
a parcel of 4CX250BS which hopefully will get
Doug back on the air.

NEW ANTENNAS AT DROUIN

David VK3AUU, has shifted QTH and is now
located at Drouin South and is 400 feet (121m)
ASL. He reports: " I have just finished building a
couple of new antennas. The six metre one is nine
elements on a 36.5 feet by two inch boom and the
two metre one is 19 elements on a 38.5 feet by 1%
Inch boom. As well as those, I also have 33
elements on a 27 feet tapered boom for 70 cm. All
are basically DL6WU antennas with 1:1 folded
dipoles and 4:1 halfwave baluns, but the element
lengths are calculated using an algorithm which I
have produced from a set of DL6WU figures. The
driven elements are 1:1 folded dipoles which give
200 ohms at the feed-point.
"The two metre Yagi is virtually matched across
the whole band and the gain is estimated at 16.8
dBd from the beamwidth of 23 degrees. I can hear
in excess of 7 dB of noise from Sagittarius A with
a 3SK97 GaAsFET preamplifier mounted where
the antenna joins the mast. The Mount Gambier
Beacon is now there all the time, even with
Trevor's (new) antenna and the Canberra Beacon
fades in and out of the noise most of the time,
unaided by passing aeroplanes. Ian VK1BG, can
always hear my CW and, in fact, I have worked
VK1 or VK2 on 11 days out of 16 since the new
antenna went up. On 29/9, at 4.30 am local time, I
copied Chris VK5MC, back off the moon quite
well, which I could not do with an 18 feet Yagi.
Tests on the local beacon indicate about a 10 dB
improvement in received signals with the new
beam about 10 feet higher than the other one and
the preamplifier a bit closer to the antenna. I hope
to put up four of these monsters, stacked 16 feet
apart, in the autumn.
"The six metre version is cut for 50.100 MHz
and it does seem to do okay at that frequency but
does not do very well at 52 MHz. but I have not
doe any measurements on it yet." (Probably
would have been better cut for 51 MHz when it
would have probably been very reasonable over
about 2.500 MHz. My eight-over-eight system
does not rise above 1.4 to 1 from 50.000 to
52.600.. .5LP).
"The 70 cm antenna gave trouble in matching
and finished up with a T-match and a universal
matching stub into a 4:1 balun. It has a beam
width of about 17 degrees, but that was measured
on sun noise which only gets up to 5 dB, so is not
accurate. However, the sun noise is above 4.5 dB
from 430 to 440 MHz with a 3SK97 on the boom
about 18 inches from the feed. I have heard
K2UYH, but cannot hear VK3UM off the moon. I
have a 39 feet long 49 element antenna partly
constructed, just to see how far you can go, but
will probably settle for four by 19.5 feet antennas.
" I have also built a 26 feet high tilt-over tower on
which the three Yagis will be mounted for this
summer, 50 MHz at 26 feet, 432 at 32 feet and 144
at 40 feet. I have 150 watts on 50 and 144 and 80
watts on 432.1 hope I can be one of the top Ross
Hull stations this year, but, unlike a lot of others,
my activity will not cease after the contest."
Thanks for the letter David, and now that you
have retired we are looking forward to some very
good signals out of Drouin, which is located about
92 km ESE of Melbourne.

WESTERN AUSTRALIA

I was pleased to receive a letter from Don VK6HK,
which he said was a result of him being "named"
in my column as one who should be contributing
to the DX Standings Column and he comes up
with a list commencing in 1951.
Some curiosities which Don lists are:


FIVE METRES — AGAIN

Last July, I published a letter from John VK5UL, referring to happenings on the old five metre band, plus his involvement in the early radar applications.

This letter created more than a little interest and several correspondents have commented on it in passing. However, Keith Heitisch VK4HK (formerly VK3HK), carried out his own research on five metre operations and from the large amount of information sent me, including a photocopy of the relevant pages of his log book, I have put together the following for the interest of readers.

Keith originally lived at Mitcham, east of Melbourne, and the saga appears to have started with the return of the amateur bands after World War II and in 1946 quite a high degree of activity was taking place on 50 Mc/s (not MHz then!), and for many months before the summer period, Keith kept nightly schedules and the saga appears to have started with the return of the amateur bands after World War II and in 1946 quite a high degree of activity was taking place on 50 Mc/s (not MHz then!), and for many months before the summer period, Keith kept nightly schedules with Eric Thomas VK3ZL of Ballarat. Results were variable, sometimes they only just got through whilst at other times signals could be S4 or S5. They concluded the chances of working interstate were rather remote, but they would keep trying.

Keith had five metre equipment mounted in his private car, operating on 51.4 Mc/s, MCW and phone. On 30/10/1946, he went on to Mount Dandenong hoping that elevation might assist him to contact distances. He worked VK3MJ, VK3NW, VK3ABA and VK3FG, all during the afternoon. On his way home at 1705 local (all times for this purpose of this historic exercise will be local) he heard VK4ZU testing. Each time he put it by Keith called him but no answer, despite copying him 5x6. VK4ZU was on 50.1 for about one hour.

It did not take long for the news to get around Melbourne, so next day there were many stations calling QO DX on 50 Mc/s. News came through on 40 metres that VK2WJ in Maroubra, New South Wales, was hearing VK3HK but no one else, frequency 51.3. His card says “Congratulations on 50 Mc/s DX.” Time was 1830. At 2012, Keith heard a station being either VK2FP or VK2FB at 5x9.

On 2/12/46, a lot of time was spent throughout the day calling QO DX until finally, at 1830, VK20C was called on schd in response to a telegram received earlier in the day saying: "Your five metre signals received 7.15 pm yesterday please reply. VK20C." No contacts resulted from the calls and the 80 metre link was too noisy and VK20C was not heard. Lots of further DX calling took place during the next two days but only local contacts resulted.

Finally the barrier was broken. At 1900 on 5/12/46, VK3HK was called by VK2NO (Don) in Sydney on 50.4 Mc/s and a two-way contact resulted. Keith sending 5x8 and receiving 5x7, thus becoming his first interstate contact. At 1910 he called VK2AHF and worked him at 5x9; 1917 VK2WJ 5x9; 1925 VK4HR 5x9; 1945 VK4XG 5x6; 2003 VK4ZU 5x9; 2035 VK2LZ 5x6; 2118 VK4HR 5x9 and 2230 VK3MJ 5x9.

The next occasion was on 9/12/46, when at 1910 VK4HR was 5x9; 2000 VK4FB 5x8 and 2025 VK4AP 5x7; all around 50.7 to 50.9 Mc/s. A letter from M Tomkins at Bundaberg reported reception of VK3HK there from 7 to 9.30 pm at S3 to 7. Thus the signals were settling into the familiar 1000 miles-plus optimum path for Sporadic E.

Referring to that first contact with VK2NO, this station sent a telegram to VK3NW in which Don said Keith’s signals eventually rose to S8 + 20 dB so the band was probably just opening up at the time of the original contact. Keith VK4HK, is now asking this is contact between VK3HK and VK2NO. They both made contact Australia on 50 Mc/s? That is a question I cannot answer, but there may be some reader who can help. It would be of historic interest to know when the first contact was. I am hoping that other bands were also being tried at the same time; eg 112 Mc/s etc.

A copy of that all important section of the log of Keith VK3HK is included in this column and your attention is drawn to some of the comments in the “remarks” column. QSL cards are held for VK2NO, VK3WJ, VK4OC and VK4ZU.

LETTER FROM JAPAN

JA1VOK sent a letter dated 16/9 (just too late for last month), in which he says six metres opened to VK4 on 12/9 and 14/9 for the first time during their

A portion of the log of Keith VK3HK.
to avoid splatter to and from nearby locals wishing to call/listen on 144.100. This would give everyone two frequencies to monitor for activity. If all on 144.100, those above mentioned in six above, the occasional ZL, VK6 or VK8 breacker might find them, if these rare birds had no luck calling on 144.100 MHz.

Some stations, good conditions on two metres to VK2ZAB, also managed 4x1 contact on 70 cm, the first confirmed for some time. Gordon had only been able to erect one of his parabolic antennas, 120 cm, but he could certainly urge those operating on the band to try and remember to implement the idea, even if you only move there after starting on 144.100, that will be some help. Eventually, it might be accepted Australia-wide for local contacts in the main or at least a second chance for the DX station.

MOUNT GAMBIER BEACON

The SREG Newsletter from Mount Gambia carries a paragraph in the President's Report (Trevor VK5NC) to the effect that recently VK5RSE has had a coasial change to the antenna system and a tune up. Trevor reports being advised of improved reception from listeners. This must be linked to the completion of Gordon's new linear. Angus mentions it was not the first VK4 to Sydney as Bill VK4LC had already worked Gordon from Mount Tonnourin.

Saturday and Sunday mornings with Gordon VK2ZAB, are always of interest. The shortness of time available to try and exchange a report on 432 at the peak of the aircraft enhancement is intriguing compared to the rather longer periods with other types of contacts. Angus says it is rare for Gordon and he to hear one another for more than about 30 seconds, if you miss the 'peak' nothing is heard, and confirmation 70 cm contacts are rare. Lack of space on the antenna tower makes a high gain array difficult for Angus. As this is the Christmas issue, I once again take the opportunity of saying "best wishes for Christmas and a happy year ahead" to all my readers.

OVERSEAS

Bill Tynan WX3O, of The World Above 50 MHz in October QST reports that the hoped for outstanding conditions which we enjoyed here in Australia last summer really did not eventuate in the same way on the other side of the world. The winter season has been that poor, but neither could it be considered "one of the best!" They had the usual periods of ups and downs, culminating in a big opening on 10/9 but the nearest stations to six metre operators from other areas and here I suppose to see if we are to be treated to a repeat performance.

With the increase in activity on six metres from England, trans-Atlantic contacts are becoming more plentiful. On 9/22 from 2320 to 2330, Worth WX2APQ, looking for news of the Cape Cod and the New England banks, worked six QSOs in all, with most of them being west coast stations. Unfortunately, the numerous Es conditions which we enjoyed over the greater part of Australia during the last six months were not repeated on the other side of the world, so many two metre contacts, certainly did not materialise in the US, so it will be very interesting to see if we are to be treated to a repeat performance on this band.

Along with many other DX stations on 144.100, it is worth noting the various OSCAR's that have been working on 144 MHz. However, during their June period, the QTH of OX3L was worked by about 20 east coast stations. Nevertheless, the enormous Es conditions which we in Australia have enjoyed during the last six months did not eventuate on the other side of the world. For instance, the DX stations there are still working mainly to VK2 and VK4. On 10/10 I had a nice contact on 144.100, with Vic VK2ZCU on 0330, also with 5x9 signals. Lynch reported Mary VK4PZ, had worked Neil VK2ZCU, on 8/10 on 144.100 MHz.

ATN HELPS SALVADORAN QUAKE

The Australian Traffic Net handled several hundred messages in the immediate aftermath of a 15 second earthquake hit on Friday, October 10.

ATN operator, Ken Richardson VK9KK, said the messages were filed to third party traffic messages seeking information on the health and welfare of people in the disaster area.
good fellowship within the DX community. Enter
to view of how the rest of the world should conduct
trust. Gone are the days of Gus Browning's
one's skills and fortitude in the DX world.
which will be fair to all and yet remain a test of
perhaps the one least likely to be proposed. The
applying the DXCC rules and often, an unrealistic
man's club to a club in which there is little or no
present and the past, there must be a middle
NEWS RELEASE, written by John, Chairman of
some comments I had received. Following is a
extensive experience has viewed the hobby over
years and your participation will be appreciated by
all readers again next year.
Next month we will look at how an amateur with
TRAVELLING
The "Globetrotting" Colivs are planning another
trip to Africa in the near future, for a duration of six
months. One of their main objectives will be to try
and operate from Malawi. Unfortunately, Mozambique was a very
delusive "No-No" however, the operators on those bands are
not actually within the boundaries of the country, is really not a consideration
at this time.
"Paraphrasing an overseas DX'er's comment on
calls GJ3JWNE and GU3JW respectively. He hoped to
visit ZS3, ZS, A2, 7R HS, 306, and V9. The visits
did not make the cut, and George has been known to "pop-up" on
some unusual places and at some unusual times! QSLs to
George via VE3DP, PO Box 137, Lynden, Ont.
LOR 110. Canada.

BURMA
Burma, a densely populated country, even though
its natural resources are unfortunately one of the poorest countries in
the world. The hobby of amateur radio is lower than last on a list of priorities, if that is possible.
The government has, however, sanctioned the use of certain
bands for DXCC applicants. It is not an April Fool Joke, but
"The DXCC is not a basket case and I wish to
allay fears that the DXCC is committed to
scrapping the program or, that it has an objective
slanted towards a "fresh start." That option is just
one of many which must be considered and is
perhaps the one least likely to be proposed. The
DXCC process is limited to investigating those
parts of the rules which are the sources of
all the grievances with the DXCC program. Specifically, the country criteria is overdue for an
update, and the DXCC program could explain which
have accrued over the years and to present it in
language which is understandable to all amateurs;
accreditation has and will remain a sticky issue
involving the IARU regions and the USA. The
name recognition that all countries do not conduct
their amateur radio affairs in the image of the
USA. The DXCC has three subcommittees dedi-
cated to studying these and other areas of the
DXCC rules. Your inputs are essential. To date,
some of you have recommended "gimmicks"
which would diminish the difficulty of the awards
program. If this is what the membership wants, let
your voices be heard. In the meantime, the DXAC
will proceed on the premise that the honour roll is
not to be an "instant jackpot," but is reserved for
those who have taken advantage of all DX
opportunities to catch a new one. Whether it takes
a year, five years, or a life time to reach the top of
the award program, is really not a consideration
at this time.
"Paraphrasing an overseas DX'er's comment on
its amateur radio affairs in the image of the


ANTARCTICA
A new group are due to exchange duties with the
present crew in the near future. Call signs and
names are unavailable at the time of preparing
these notes but be listening on the bands for new
VK0 calls emanating from the "Cold South." They
are generally below 14.175 MHz and on other
bands as conditions and work duties permit.

ABOUT FACE
can you imagine the Falkland Islands rotating 180
degrees? Not it is not an April Fool Joke, but fact.
According to research at England's Oxford
University, they have found that the Islands have
done a complete half-turn over the last two
hundred-million years. From April it is a well
known phenomenon and even Australia is head-
ing towards Asia. There is no need to panic as it is
only a few centimetres per year — but it is occurring.
Evidently, at one time in history, India crashed
into Asia and the land buckled, causing the
highest mountain range on the Earth's surface, the
Himalayas. It is still travelling northward, virtually
burrowing under the area and, since the early
settlement of man, it is estimated that the range,
seemdom conquered by man, has risen some 1500
metres!

GORGONA ISLAND
Did you work Gorgona Island? Gorgona was a
penal colony until 1985 and is locally known as
Devil's Island by the prisoners. It was actuated
under the call 5JO/FRC, by the Federated Radio
Clubs of Colombia, and was due to activated
again during October.
If you contacted them on three bands you are
eligible to work a booklet about the Island. QSL to
Box 050177, Medellin, Colombia, or PO Box 1767,
Bogota, Colombia.

Other operations are planned for the future is
you missed this one!

NOQ SLS VIA JARL
QSLs to JJ1TZK, for various operations in the
Pacific, will notreach him if sent via the bureau.
He is not a member and, it is believed, they will be
destroyed. Either send direct or save your cards.

REVILLA GIGEDO
Apparently 1985 for Revilla is planned for
March, next year, with an impressive list of
operators. Quite a number of VKs require this one.

MONACO
I am not attempting to go into the award
columnist's department, but those who have worked,
or heard of these notes but be listening on the bands for new
VK0 calls emanating from the "Cold South." They
are generally below 14.175 MHz and on other
bands as conditions and work duties permit.

DX IN THE DOLDRUMS
Not one should have listened on 10 metres on
September 28 and from 1800 to 2400 UTC. For a
time, Europeans were S9+ and from many different
call areas. Were you lucky as I did not hear
VK being worked.

It may be another Floor call all the bands as the
conditions are quite strange at the moment. It could be
a good sign that the Solar Cycle is on an upward
trend! Let us hope so as the "cupboard" has been
slightly bare.
scheduled to be installed in Yemen and, at this juncture, the successful tenderer for the work is sending a technician to Yemen. Apparently, this is the first occasion that a public AM radio station has been established in the country. Late news was that the operator was American and was due to leave for Yemen on October 8. The operator cautioned he would be unable to read the log in the absence of his once-once-off call signs of late, and it is a pity that VKS are not taking advantage of the propagation, combined with patience and tenacity, to pick them up.

Don had confirmed with Project of Trans-Atlantic Brass Founders for 1986/1986, from the RSGB, with the noted commendation of "for outstanding and consistent DX performance." Congratulations from all DXers, Don.

Finding DXing is an art wrought with frustration, perseverance and time. Are you a DXer or a listener who is very choosy for 5x9 stations, not in a pile-up?

LISTEN
TP2CE, is hoping to activate this call from 5-7th, this month.

HEARD ISLAND
VK0D Heard Island could be heard shortly, if a party was successful landing from the Nella Dan, last month. As there is apparently a lot of work to be done, operation could be infrequent, but it is believed that the Island Observers Department Observers has an amateur licence. Operation therefore, would only be in off-duty hours.

It appears that the working-party will leave the island about mid-November, but does not promise, on the Icebird which will be en route to the other Antarctic bases to effect crew changeovers and reliefs.

If you have it confirmed, please refrain from being in the log and allow others to have this much needed country confirmed.

NEW CALL
Noel 5O7AV, is presently using the call sign, 4S7AVR. Noel is an airline captain and the airways of Pitcairn are well known to him. His present QSL address is 15/2 Balahemullenia Lane, Colin 6, Sri Lanka.

Y1BBD
A number of operators use the call and generally give their own box number for QSLs. If you miss it, do not despair as ZD6CK will be operational for two months, as conditions permit, on the Icebird which will be en route to the other Antarctic bases to effect crew changeovers and reliefs.

LATE NEWS

PITCAIRN ISLAND

Seems Pitcairn will have another amateur soon! Meralda Warren, sat for the examinations recently and is now awaiting a licence.

Congratulations, Meralda, and that you are heard on the bands. Arthur VK3UX, John VK3JF and Col VK3WQ, have had their spell of being cared for by the nursing staff of three major Melbourne hospitals. All DXers wish this trio well and a speedy recovery.

SOUTH SHETLANDS

Two operators! Wow, how about that! Well, it is not as good as it sounds because ZD9CL (QSL via ZS6AEN) was only active for eight weeks. But, don't despair as ZD9CK will be operational for two months. Good luck and hope the call sign ZD9CL, followed by the ANZA Net, capable MCed by Percy VK3PC, for updates on this rare location. The Net is on both 15 and 20 metres, as conditions permit. Newcomers are more than welcomed by Percy.

NOTICE

NO TIME, BUT STILL OPERATES

A note from Joy VK2EBX, intimates that she has little time to operate, but she picked up a few nice ones over the last few weeks.

One was GB5OC, operational as a special event station in October, from Ashton University, Birmingham.

On 20 metres, the outstanding ones have been KB6CL, KL7JA and AH65C, with quite a few PEs and QSLs being issued.

It was also lucrative on 40 metres with stations such as 5W1FT, ZL7AA, GB2B2JX, and others with weak, but readable signals.

The list was received from Don G3NOF, of the Yeovil Amateur Radio Club, in Somerset (Joy's OTH is Yeovil). Don, noted that the call GB4OYC was used from October 16-19, to celebrate 40 years of operation.

This was a call that really got amongst the special calls as, in mid-August they operated as GB2YFT (Yeovil Festival of Transport) and GB2MSS (Mid-Somerset Show). The United Kingdom is really allocating a number of special once-off call signs of late, and it is a pity that VKS are not taking advantage of the propagation, combined with patience and tenacity, to pick them up.

Don was chauffeur, of Trans-Atlantic Brass Founders for 1986/1986, from the RSGB, with the noted commendation of "for outstanding and consistent DX performance." Congratulations from all DXers, Don.

Ladies and gentlemen, DXing is an art wrought with frustration, perseverance and time. Are you a DXer or a listener who is very choosy for 5x9 stations, not in a pile-up?

QSLs AND ALL THAT

I had second thoughts about publishing the calling card signs that Joy VK2EBX, had not received cards from, as it was not my intention to embarrass anyone. I am now glad to announce that a bumper crop of Joy's missing cards and probably a few more for others.

A note from Sam VK2AKP (also 9H1EU and Z9V3EU) re this occasion. Sam notes, that occasionally reads about amateurs sending cards via the bureau and receiving no answers. One thing to remember is that not all amateurs belong to a QSL bureau and there are no automatic returns receiving their cards. It would therefore be prudent to ask an operator if he is okay for cards by this method.

Another item to remember is that it takes sometimes years before the cards reach the member and then one has to wait his/her reply.

"Joy complained about Tony 9H1EU. Tony is a very keen amateur, but unfortunately is not a member of any bureau, so the chances of him receiving Joy's card is very small and if he does, how is he going to QSL?"

Sam has, or will obtain, cards from most 9H1 and 9H4 operators and is willing to assist, either by a SASE to OTH or by contacting him on the Land Forces Amateur Radio Group Net, 3.5MHz. VIC 5/2403. 9H4TV.

Henceforth, Joy, who has cards for, and others will get their cards in the near future. Thanks Sam, for your insight into the system and your assistance.

BITS AND PIECES

TA1A advises that IRCs are not acceptable in Turkey!! * * Do not forget the best photograph of your shack and a little about yourself for next year's issues of ARRL QST. We may win that SWR Bridge kindly donated by GFS Electronics. * * J40MAR was Rudi DJ5RT operating from (SV5) Kos Island. "MAR" stands for Military and Amateur Radio, and V50MAR was operational MM from a Coastline Vessel and does not count as a DXCC country. * * Krishna signing from Nepal, is a rapid QSLer. Apparently, he is running a small radio station with his father, the keeping Father Moran company on the bands in this vastly populated country, where DXCC has not really been recognised as yet. * * Frank ZL1AMO, who is on station operational on packet radio from the Cayman Island Group, QSL to VE4XXN. * * Mount Athos stations still in the air. * * WHY is the big question. Is it more than the documentation of ON17PST2 was due to go QRP in October last? Maybe, the stations are getting organised on the WARC Bands. Although other Regions only encourage CW and Narrow Band modes, have you heard or worked them? * * Arabian Gulf Airlines, in the "No-Go" again in Uganda. * * 3G9 no — it is not a typographical error. The call sign 3G9BSY will be here in September, as was located in the Antarctica in December 5 for five weeks. The operators are ICED who promise modes such as CWSSSB/RTTY and AMTOR on all bands from 160 metres to 10. * * The Antarctic station had its share of operators in October. Hope that the large number of VKS in need of this area for a "new one" made it. * * Luz 9S2LZ is still active spasmodically but is very quiet at the moment. Very lucky to make a contact. * * Klmaan signing as XUHS has been reasonably active again, generally 1300-1400 UTC. CYVR was activated by the Radio Club of Vancouver and the new call sign YL5L is Iala de Lobos. * * EF6RCD was a special call used to activate Formenara Island. The station used one kilowatt on all bands. QSL to E3A0V. Calvin VQ8AQ is a fire up until March, with hopes of operation on 160 metres. * * Akito JASDJQ will sign NTS7 until December 5, after hoping to sign as 2X9WX at the end of November. QSL to EA4GZ. * * VQ8ESE has used one kilowatt on all bands. QSL to the use of 10 MHz, as from October.

CLOSURE

A Happy Christmas to all and the best in health and happiness for 1987, from this QTH to yours. Do not eat too much Christmas Pudding and the trimmings, as the Ross Hull Contest needs your support. And most importantly, do not forget to send in your log!
The deadline of these notes for the February edition is December 29. In other words, there is no need for a columnist to make a decision, and please do not forget the Best Looking Shack Competition, commencing next month.

In closing, a couple of "gems" from the Rhe KH6BZE Editor of the weekly propagation publication "KH6BZ Reports": "... when you retire you are in control of one of the most powerful work tools — tomorrow! l" and "... you know you are getting older if you run into a girl you once knew and it is her daughter!! I!!

THANKS

Since thanks since I have been writing this column, and particularly over the last year, to the editors of weekly, bi-weekly and monthly publications such as: ARRL, B&Q CO-OSO, The DX Family Foundation Newsletter, Inside DX, The World HIGH GRL. Manager List (is this for all DXers?); KH6BZ Reports (for those interested in propagation and hilarious quips, not to be missed); Long Island DX Bulletin, Papakura Radio Club Bulletin (which has a editor with a sense of humour; ORZ DX (with Bob WSKC), a tireless editor who never seems to rest); RSGB DX News (a valuable Weather News and QRP DX, a must for those interested in propagation and hilarious quips, not to be missed); ARRST; COOSO; The DX Family Foundation Newsletter, and Westlake's Amateur Radio Club Newsletter; magazines including Break In, CQDX, DX Post, JA CO, JARL News, KARL News, QST, Police Life, RadioCom, Vernon, Weather News and Worldwide, to mention but a few.

Individual contributors this month include: JH1KRC, JP1LAB, WR2FGU, WSBQG, VSK 2AKP-EBX, APA, XV1, YL, BNE, ZL1s AMM and AMM and Christa Stueckle. To all, a congratulation, plus interest and information has been greatly appreciated and invaluable. Sincere thanks to one and all and let us hope 1987 is a year of health, peace, prosperity and plenty of the DX we all need. —73, Ken VK3AH

"Bought an absolute bargain at the Field Day OM — although I haven't found out what it is yet?" —VK2CQP

HISTORICALLY SPEAKING

Following is a portion of a dossier, containing hundreds of newspaper clippings, compiled by George Palmer VK42G and contributed by Jim Davis W6ST and Jim Davis W6ST, of some note and has the original Carbon Reisz microphone used by Broadcast Station 7UV in his microphone museum. He also has a private cinema with many restoration was last performed, a complete 1927 "Talkie" system and Disc No. 7 which was played in conjunction with reel one of the Warner Brothers 1927 movie, "The Jazz Singer."

George Palmer, was the founder of Broadcast Station 3AK in Melbourne, and in 1933, he bought 7UV Ulverstone, Tasmania. At the age of 17, George was the youngest film producer in the world. In 1927, he made the film "The Northbound Limited," an express train drama in which he performed all the stunt work.

In early 1935, the PMG's Department approved a substantial power increase for 3AK. As a result of this power increase it was necessary to build new equipment so the station could serve the Victorian listeners in the same efficient manner as other Melbourne B class stations. The wavelength of 200 metres however, remained unaltered. The station was located at 116 Queen Street, Melbourne, and was in its fourth year of operation.

During the early years of radio, when amateurs were allowed to transmit music on the lower end of the broadcast band, some difficulties were encountered by the amateurs and broadcast stations.

From Broadcasting Business, March 8, 1935:

"Following an alleged statement of Mr Brown, Director of Postal Services, and published in the Melbourne 'Sun-Pictorial' on Saturday, 23rd February, there has been some discussion in Melbourne broadcasting circles as to what constitutes a B station.

"The 'Sun' paragraph read as follows: 'So as not to interfere with station 3AK, three or four amateurs when all that is necessary is a simple re-arrangement of their schedules?" Inquiries at the Postmaster-General's Department failed to determine whether the Department considered whether 3AK was a recognised B station or not. "The fact of the matter is that there are no B stations and on that score the statement is loose. There are three divisions of Australian broadcasting stations: the National stations, the licenced stations and the amateurs. "3AK is most decidedly not a National station and, considering that it pays the same licence fee as the other licenced stations, it may safely claim to be a recognised licenced station. "Owing to its looseness, a misconception about 3AK can be caused and it is rather surprising to see such a statement allegedly emanating from the PMG's Department. If, on the other hand, such a reference was not made by the PMG, then it is loose and harmful reporting.

The amateur stations affected in the above were 3BT, 3OV, 3OV, 3TM, 3KE, 3XL and 3CR. No doubt the matter was eventually resolved amicably between all parties. On April 20, 1935, 3AK operated from 12.30 pm to 2.30 pm, then from 10.00 pm to 12.00 midnight.

Inquiries compiled from the following 1935 newspaper clippings: "THE AGE, Melbourne; BROADCASTING BUSINESS, Sydney; LISTENER IN, Melbourne; AMATEUR RADIO, Melbourne; WIRELESS WEEKLY, Sydney."

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SPECIFICATIONS
BANDS
ELEMENT NUMBER
FREQUENCIES COVERED
REFLECTOR TYPE
DRIVEN ELEMENTS
DIRECTORS
INPUT IMPEDANCE
VSWR
MAXIMUM POWER
POLARISATION
BANDWIDTH
GAIN OVER A % WAVE DIPOLE
FRONT TO BACK AT CENTRE
FREQUENCY
CONNECTION

RF AEROSPACE SAT 7018 GR
SPECIFICATIONS
BANDS
ELEMENT NUMBER
FREQUENCIES COVERED
REFLECTOR TYPE
DRIVEN ELEMENTS
DIRECTORS
INPUT IMPEDANCE
VSWR
MAXIMUM POWER
POLARISATION
BANDWIDTH
GAIN OVER A % WAVE DIPOLE
FRONT TO BACK AT CENTRE
FREQUENCY
CONNECTION

RF AEROSPACE HD 205 Y
SPECIFICATIONS
BAND
ELEMENT NUMBER
FREQUENCIES COVERED
REFLECTOR TYPE
DRIVEN ELEMENT
DIRECTORS
GAIN OVER A % WAVE DIPOLE
FRONT TO BACK AT CENTRE
FREQUENCY
CONNECTION

RF AEROSPACE HD 604 Y
SPECIFICATIONS
BAND
ELEMENT NUMBER
FREQUENCIES COVERED
REFLECTOR TYPE
DRIVEN ELEMENT
DIRECTORS
INPUT IMPEDANCE
VSWR
MAXIMUM POWER
POLARISATION
BANDWIDTH
GAIN OVER A % WAVE DIPOLE
FRONT TO BACK AT CENTRE
FREQUENCY
CONNECTION

RF AEROSPACE RFA 70 CMVCP
SPECIFICATIONS
BAND
FREQUENCIES COVERED
INPUT IMPEDANCE
VSWR
MAXIMUM POWER
POLARISATION
GAIN OVER A % WAVE DIPOLE
FRONT TO BACK AT CENTRE
FREQUENCY
CONNECTION

RF AEROSPACE RFA 2MVCP
SPECIFICATIONS
BAND
FREQUENCIES COVERED
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- VSWR: ≤ 1.3:1
- Max. Power: 100 Watts
- Polarization: Vertical or Horizontal
- Bandwidth: 10 MHz at ≤ 2/1
- Gain over 1/2 Wave Dipole: 13.8 dB Measured
- Front to Back at Centre Frequency: Greater than 35 dB Measured
- Side Rejection at Centre Frequency: Greater than 65 dB Measured
- 1/2 Power Beam Width: E plane = 17°, H plane = 23°
- Connection: Approx. 24 Metres RG213 Coax Cable, Terminated with a "N" type female plug.
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CONTEST CALENDAR

DECEMBER
5-7 ARRL 160 metre CW Contest (Rules this issue)
13-14 ARRL 10 metre Contest (Rules this issue)
-13 Ross Hull Memorial VHF Contest (Rules November issue)

JANUARY
-1 YLBA SWL Competition (Continues to December 31, 1987)
-5 Ross Hull Memorial VHF Contest (Rules November issue)
23-25 CO WW 160 metre CW Contest
31- YL ISSB CW Contest

FEBRUARY
1- YL ISSB CW Contest (concludes)
7-13 QCW CW QSO Party
14-16 YLRL YL OM Phone Contest
20-22 CO WW 160 metre SSB Contest
21-22 YL ISSB Phone Contest
28-30 YLRL YL OM CW Contest

MARCH
2- ARRL 10 metre Contest
7- QCW CW QSO Party
14-15 John Moyle Memorial Field Day Contest
28-30 CO WW WPX SSB Contest


There certainly seems to be plenty of activity available to those interested in contesting during the next couple of months, be it either phone or CW, OM or YL operators. I trust that you will enjoy it all.

Well, once again we come to the end of another year. The time certainly does seem to fly past. Looking back over the last 12 months, I find that the most moving presentation that contesting in Australia has been on a fairly sound footing. As Federal Contest Manager I know that I cannot please everybody as far as rules go. I have, however, tried to bring about improvements in contests without doing so in a radical way. Change can, undoubtedly, be a very good thing at times. Change, just for the sake of change, is a pointless exercise. I feel that more can be done to improve contesting within our area of operations, as well as throughout the world of amateur radio in general. I will be making some recommendations to the next Federal Convention in 1988, as well as possibly leaving suggestions for my successor later in the coming year to think about. Meanwhile, I will watch with interest to see whether or not major changes of these subjects will be brought about to Ross Hull Contest format, whether we see an increase in CW operation in contests, whether more novices will begin to participate in contests. It will also be interesting to see how well the combining of our Field Day and Remembrance Day Contests with like events in New Zealand, will work out. Thus, I do look forward to the coming new year with anticipation as well as enthusiasm. Traditionally, at this time, we do contemplate the past and look forward to the future. I would wish for us all, that the future will be one of happiness and peace.

Just recently I attended a most moving presentation held at dawn in the parklands bordering the City of Adelaide. On a particularly beautiful and tranquil morning, a group of young women, all dressed in white, gathered there representing the Rising Generation. They had brought with them, written messages which were to be attached to balloons. These messages, much like the vast water content involved in any actual balloon, were about such things as peace and love. Certainly a very fitting approach with the International Year of Peace, which is fast coming to a close. The theme chosen has been "Where Faith, the Divine Nature of Mankind, Individual Worth, Knowledge, Choice and Accountability, Good Works and Integrity. The choice of these subjects to have such that our Amateur Radio Fraternity would wish to apply such principles in our activities. These young women were sending their messages attached to balloons in the hope that they would be found by someone and their messages read and understood. Likewise, we, as radio amateur operators send messages. We have the benefit that in an instant usually know if someone has received our message.

I would like to think that as we send out messages in the new year and the years to come, we too might carefully consider our fellow man and try and make sure that our messages are ones which will be of help in building a better, happier world. The concept of International Ambassadors of Goodwill, so let us not just think of this only at Christmas time but rather make a firm determination to try to follow this idea at all times. Let this not be only on an International level either, but also apply it to our relationships in the amateur around the corner, our Divisional Council, club officers and members as well as our workmates, non-amateur friends and neighbours and particularly our families. I am sure that we can be a force for good in the world with our association with such a marvellous hobby as amateur radio.

I would like, at this special season of goodwill to express the wish, not only from the author, but also myself and myself for a very Happy and Blessed Christmas and for a Peaceful and Successful New Year.

—73 de Ian VK5QX

REMEMBRANCE DAY CONTEST — 1986

CONGRATULATIONS TO THE VK4 DIVISION

Below you will read the full results of the Annual Remembrance Day Contest for 1986. The VK4 Division, I am sure will be most pleased to receive the trophy at the 1987 Annual Federal Convention. The last time that Division won the contest was in 1971, so one can see that there has been quite a drought for VK4. It may interest you to know just how many times the trophy has been won by each Division. Here are the details:

VK1 — 2; VK2 — 3; VK3 — 1; VK4 — 4 (including 1986); VK5 — 14; VK6 — 8; VK7 — 7.

Here are a few more statistics regarding the 1986 contest.

DIV NO LOGS/NO LICENSEES ENTRIES PERCENT

<table>
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<th>DIV</th>
<th>NO LOGS/NO LICENSEES</th>
<th>ENTRIES</th>
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</thead>
<tbody>
<tr>
<td>VK1</td>
<td>55/302</td>
<td>18.2</td>
</tr>
<tr>
<td>VK6</td>
<td>120/1438</td>
<td>8.34</td>
</tr>
<tr>
<td>VK7</td>
<td>121/777</td>
<td>6.82</td>
</tr>
<tr>
<td>VK8</td>
<td>33/5897</td>
<td>5.62</td>
</tr>
<tr>
<td>VK9</td>
<td>6/173</td>
<td>3.46</td>
</tr>
<tr>
<td>VK10</td>
<td>80/369</td>
<td>3.40</td>
</tr>
<tr>
<td>VK2</td>
<td>133/4887</td>
<td>2.72</td>
</tr>
<tr>
<td>VK3</td>
<td>93/4559</td>
<td>2.03</td>
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</table>

Average Points per Log by Division (listed in order of average score)

<table>
<thead>
<tr>
<th>DIV</th>
<th>Average Points per Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK5</td>
<td>156/58/121</td>
</tr>
<tr>
<td>VK6</td>
<td>632/455</td>
</tr>
<tr>
<td>VK7</td>
<td>379/33/9</td>
</tr>
<tr>
<td>VK8</td>
<td>134/201/20</td>
</tr>
<tr>
<td>VK9</td>
<td>163/45/54</td>
</tr>
<tr>
<td>VK10</td>
<td>978/89</td>
</tr>
<tr>
<td>VK2</td>
<td>1379/133</td>
</tr>
<tr>
<td>VK3</td>
<td>263/9</td>
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</tbody>
</table>

The formula for determining the winning Division in this contest has been changed a number of times. It is basically the same as the formula for counting contacts. I am quite convinced that simply scoring one point per contact is the right method and I can happily, more than support this premise. However, I am far from convinced that the method of derivation of the formula determining the final result is what is really required. In a later issue, I will provide more comment on this subject with a view to stimulating discussion at the next Federal Convention. Meanwhile, it is good to see the trophy begin to change hands on a more frequent basis.

Amongst the individual results of the Remembrance Day Contest, you may note the entry from VK6. This will, no doubt be a clear indication of just how much effort they put into the contest. The following is an actual copy of Matthew’s log that, on quite a few occasions, he was logging at a rate of up to five contacts per minute. I know, as a fairly experienced contest operator, that it does require quite a deal of concentration to maintain a contact rate of four per minute and upwards. I imagine that when Matthew obtains his call sign and comes on the air as a contest operator in the transcontinental 24 hour contest, he probably give quite a few of us a fair run for our money!

The standard of logs generally was fairly good, as evidenced in my column in November, however, I would again plead with the minority of entrants to please read the rules for contests thoroughly before submitting logs. Different things happen, and the posted article was delivered in accordance with the best traditions, had attempted to deliver the package to the WIA rooms at the Thebarton Convention Centre. These rooms are only attended when meetings take place at the Divisional Headquarters. Australia Post had taken this action. I am sure, in good faith rather than just the deposit the package in a post office box. Thence, the second occurrence of this nature to my knowledge in three years. The message is Do not send your log so late that it needs extreme pressure. (Recover your good name if any, so to speak.)

The year has now had somewhat more experience at handling the Remembrance Day Contest and thus was much better organised. Fourthly, and by no means of least importance, I had available to me an excellent computer facility to help in compilation and listing of the results. This latter aspect certainly made my task a great deal less onerous and accounts to a large degree for the quick publication of results. It is certainly a terrific effort, and I note from Matthew’s log that, on quite a few occasions, he was logging at a rate of up to five contacts per minute. I know, as a fairly experienced contest operator, that it does require quite a deal of concentration to maintain a contact rate of four per minute and upwards. I imagine that when Matthew obtains his call sign and comes on the air as a contest operator in the transcontinental 24 hour contest, he probably give quite a few of us a fair run for our money!

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How about a few words of gratitude for the assistance, or maybe tolerance, given by our wives, etc. Susan, my wife, ran the log by phone while I was out on the air. I certainly could not have been more grateful — VK1PJ.

I can't remember having heard as much action as there was on the air during this weekend, although I understand others did have. I was more interested in the contacts that I made than in the quantity of them. I was rather surprised to hear the number of Gentlemen working in the CW end of the band — VK43F.

Just a short note to say just how much we enjoyed the contacts on the air...VK1PJ.

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VK4 DIVISION

**HF Phone**

4W1 414 4MJ 181 4AKK 100 4ES 90 4ADD 30
B8E 421 4BCS 175 4BMK 87 4AKK 26
4XY 414 4DR 164 4AMH 77 4RC 24
4SWB 154 4DX 154 4AUX 164 4AB 24
4BVW 286 4ISA 152 4FX 65 4ADD 22
4AEV 276 4OD 131 4BC 11 4MU 20
4WIZ 275 4BIF 123 4NLB 58 4WM 19
4AVR 231 4BIF 94 3NLB 33

**VHF Phone**

4ZV 206 4ISA 79 4ZGC 43 4RZ 19
4UJF 154 4ADC 63 4UJ 38 4GT 17
4ZAL 145 4AGC 62 4BY 28 4KX 17
4ZAV 241 4BR 46 4ACD 53 4UJ 13
4VGR 246 4RT 117 4CC 50 4GR 13
4AQO 233 4RM 116 4SAA 50 4LF 12
4BJA 211 4BZB 141 4AW 47 4MU 20
4BJA 202 4ACC 100 4NWX 42 4ZN 10
4AQD 233 4RM 116 4SAA 50 4LF 12
4VR 241 4BR 46 4ACD 53 4UJ 13
4BZB 200 4ISA 152 4FX 65 4ADD 22

**VHF Phone**

**HF Phone**

Check log received from VK3NKW

**TOTAL POINTS VK4 DIVISION**

9786

VK5 DIVISION

**HF Phone**

5ADD 601 5SAPG 155 5SWNT 70 5TP 35
5B70 5SA 155 5S0 35 5A0 31
5SS 513 5XT 131 5SNW 67 5BO 30
5S0 519 5SAP 115 5SKX 85 5AIM 31
5AYD 429 5EFN 112 5SRV 62 5DDH 27
5ZM 425 5AX 108 5PKW 62 5DP 25
5AJL 365 5OT 101 5HDD 51 5GJ 20
5NOQ 291 5SIR 100 5BMT 54 5ABY 21
5ZRO 243 5AV 104 5SNOB 51 5OB 18
5XI 233 5SACW 100 5STZ 50 5ZRE 20
5SWZ 229 5SAR 97 5S0F 50 5LCC 18
5ZK 226 5AD 95 5S0V 51 5OS 18
5AH 210 5XTX 91 5UJ 45 5SO 13
5AAC 210 5SEA 86 5SR 41 5KX 12
5GZ 180 5STW 75 5BWD 41

**POINTS SUB-TOTAL**

10694

Check logs were received from VK5s ADC and AVQ

**HF CW**

5SUM 179 5FX 74 5AIU 39 5BZW 12
5SWL 180 5SWX 139 5BZW 18
5GZ 180 5SW 75 5BWD 41

**POINTS SUB-TOTAL**

741

Check log received from VK5RK

**VHF Phone**

5CKX 360 5SKIA 157 5SOR 87 5ZAH 39
5AKK 351 5SRV 136 5STZ 73 5TC 31
5AK 351 5SACD 134 5SVA 87 5UUE 28
5APA 246 5SRR 111 5SAH 55 5FX 24
5ADZ 230 5AJU 104 5SBZ 53 5A0V 14
5A24 234 5ASS 100 5SYX 51 5YX 12
5SS 201 5SACW 100 5KBY 46 5SZK 12
5BQ 170 5BMT 100 5SN 94 5KX 12
5ANW 164 5SKM 92 5A01 44
5OZ 163 5SAIM 90 5SKC 40

**POINTS SUB-TOTAL**

4203

Check log was received from VK5BWZ

**TOTAL POINTS VK5 DIVISION**

15638

**VHF DIVISION**

VHF Phone

5CKX 360 5SKIA 157 5SOR 87 5ZAH 39
5AK 351 5SRV 136 5STZ 73 5TC 31
5APA 246 5SRR 111 5SAH 55 5FX 24
5ADZ 230 5AJU 104 5SBZ 53 5A0V 14
5GZ 180 5STW 75 5BWD 41

**TOTAL POINTS VK5 DIVISION**

15638
Address for Logs: Logs should be sent to RSGB HF Contest Committee, PO Box 73, Lichfield, Staffs WS13 6UJ, England. Adjudication comments made on Monday, April 13, 1987, and any entries received after this date may not be accepted. It is suggested to send logs Air mail.

Awards: The winner will receive the Senior Rose Bowl, and the runner-up the Junior Rose Bowl. Certificates of merit will be awarded to the first, second, and third placings. In addition, to celebrate the 50th BERU/Commonwealth Contest, special mementos will be awarded to the leading overseas station and to the operator who, in the opinion of the Contests Committee, has contributed most to the BERU/Commonwealth contests during the 50 years of the contest.

Receiving Section: Dates and times as above. Only the entrant may operate his/her receiving station for the contest. Holders of a transmitting license for frequencies below 30 MHz are not permitted to operate their receiving station. Calls outside the entrant's own call area must be heard in a contest. CQ or test calls will not count for points. A station may be logged only once on each band to count for points. When both stations are heard they should be logged separately and points claimed for both entries, provided they are both outside the entrant's own call area. Each completed band shall score five points. In addition, a bonus of 20 points may be claimed for the first, second, and third station heard in each British Commonwealth call area. British Isles prefixes count as one call area.

Logs: A separate log is required for each band. Logs should show time/UTC, call sign of station worked and points claimed. Logs should show time/UTC, call sign of station worked and points claimed. Entries: Each entry should consist of logs for each call sign of station worked and points claimed. Entries will be evaluated by the author, the Contest Secretary, and the author of the ARRL 1987 Call Book.

Awards: The Receiving Rose Bowl to the winner. Certificates of merit to the leading entrant in each ARRL section and DX country, and to the top scoring multi-operator station in each ARRL division and continent. The ARRL 160 Band Plan requires the WVE stations to transmit only in the 1.800-1.825 and 1.830-1.850 MHz segments, keeping the DX Window (1.825-1.830 MHz) clear for DX stations. They will indicate where they will be listening for cross frequency contacts.

The usual grounds for disqualification — violation of rules, excessive duplicate contacts, etc. will prevail. Logs with more than 200 QSOs must include dupe sheets. (A large SASE to the ARRL will usually get the necessary forms to make log keeping for any of the ARRL contests easier.)

All entries must be postmarked no later than January 4 and be posted to: ARRL Communications Department, 160 Contest, 225 Main Street, Newington, Connecticut, 06111, USA.

ARRL 10m Contest: To be held from 0000 UTC, Saturday December 13, to 2400 UTC, Sunday December 14, 1986. This is the 14th Annual 10 metre Contest Contest. The ARRL and CQ call areas, in which DX stations are permitted to work other DX stations, are not limited to working W/VE stations only. The contest station may be worked once on phone and again on CW; no cross-mode however. A maximum of 36 hours operating time is permitted out of the 48 hour contest period for all stations.

Categories: — Single operator, mixed mode, phone only or CW only. Multi-operator mixed mode only.

Exchange: — W/VE stations (including KH6 and KL7) send RS/T and State or Province. DX stations (including KH2, KP4, etc) send RS/T and DX multiplier.

Scoring: — Phone QSOs are worth two points, CW four points and novice eight points.

No multipliers are awarded. Logs will prevail. Dupe sheets are required for logs with more than 200 QSOs. The usual disqualification criteria will be observed. Mailing deadline for all entries is January 18, 1987 to ARRL Communications Department, 160 Contest, 225 Main Street, Newington, Connecticut, 06111, USA.

NOW AVAILABLE

THE 1986-87 WIA CALL BOOK IS NOW AVAILABLE FROM DIVISIONAL OFFICES.

PRICE: $6.50 plus post and packing

AMATEUR RADIO, December 1986 - Page 39
national co ordinator
Graham Ratcliff VK5AGR
information nets
AMSAT Australia
AMSAZ
control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
ITU Designation: 5Z0I
primary Frequency: 3.685 MHz
Secondary Frequency: 7064 MHz
AMSAT on PACIFIC
Control on Saturday
14.292 MHz
Participating stations and listeners are able to obtain basic orbital data, including keplerian elements from control. AMSAT Australasians, AoR's, will soon enter in some WIA Divisonal Broadcasts.

acknowledgments
Contributions this month are from Bob VK3ZBB, Graham VK5AGR, USAT Bulletin Board, and AMSAT-Telemail.

amateur radio on nasa space station?
Representatives of NASA, AMSAT and ARRL met recently to begin a long-term program which could lead to amateur radio being a permanent passenger on NASA space stations. At the meeting of the Amateur Satellite Coordinating committee, members of the Shuttle Amateur Radio Experiment (SAREX) and other groups met at the ARRL National Convention in California, to discuss initial ideas for an Amateur Radio Satellite on board the Space Station. The Jazz project, which is considered a top priority for the space station will be scheduled for launch in 1990.

Oscar-10 recovery efforts
An international group of engineers and command stations continues to recover Oscar-10, which has been in operation for several months. The failure of the spacecraft's on board computer is the result of a series of events that occurred during the International Space Station. Members of the amateur radio experiment (SAREX) group and others met at the ARRL National Convention in California, to discuss initial ideas for an Amateur Radio Satellite on board the Space Station. The Jazz project, which is considered a top priority for the space station will be scheduled for launch in 1990.

UOSAT-Oscar-9 is five years-old
UOSAT-Oscar-9 was launched successfully by NASA on October 6, 1986. The satellite has performed its mission without failure and has been in operation continuously for five years. The satellite is currently in orbit and is functioning as designed.

Oscar-10 historical report
Three Years of Operation with AMSAT Oscar-10
A detailed report by Karl Melzer DJ4ZC.

AMSAT/IO Journal, September/October 1986

1 Introduction
AMSAT Oscar-10 was launched on June 23, 1983 and is the first "Phase-3" satellite in space; its predecessor, P-3A, was lost in 1980 due to a launch failure. Compared to all previous AMSAT satellites, a completely new satellite architecture is employed in the P3 satellites, which represents a significant advance in cleanness and technology. The satellites are built around the new architecture and are an integral part of the P3 satellite system. In addition, several risks were also intrinsic to this technological advance; we had therefore estimated the lifetime of the first P3 satellites at three years. In these three years, Oscar-10 has significantly enriched amateur radio despite many adversities and has reinforced our opinion that this is the right path to follow.

2 Failures in the satellite
In a report of this nature, it is appropriate to initially describe the failures that have occurred in the satellite. More important however, is the analysis which would prevent reoccurrence of these failures. This paper will describe the presumed causes (P) and the necessary consequences (N) for future satellites will be discussed.

1. Failure of the temperature sensor in the U-transponder's transmitter. The sensor, as all temperature sensors in AO-10, is a YSI-44303-NTC combination, which consists of two NTC resistors integrated in a bridge and which must be supplemented with a resistor in our circuit.

The temperature range is practically linear between -30 and +50 degrees Celsius, and an individual alignment of the channels is not necessary. After 2.5 years of operation, the sensor in channel 06 suddenly indicated significantly too low temperatures, although changes could still be seen.

P A comparison of the indicated temperature values with the probable temperatures from previous operation and tests led to the conclusion that the defect was caused by section T2 of the sensor becoming electrically non-conductive.

N The failure appears to be caused by a chance mechanical breakdown. Since our experiences with the sensors are otherwise quite good, there are no consequences.

2. Antenna relay for the 24 cm antennas. During initial operation of the Linterponder, the relay of the 24 cm directional antenna had over 10 dB attenuation. After the relay was actuated approximately 10 times, a faultless contact was achieved.

3. Memory improvements for Phase-3C
Harris Corporation of Melbourne, Florida, has agreed to supply AMSAT with special memory modules for its Phase-3C spacecraft. The modules were specifically designed and optimized for use in space. The new Harris modules, valued at $80,000 are produced by Harris' Custom Integrated Circuit Division in Melbourne. They will supply the IHU with 32 kbytes of reliable memory.

Gordon Hardman KE3D, is building a new IHU memory board for Phase-3C. This board must be operationally identical to the one already installed in the satellite. The new Hardman board will be completed and delivered to Germany and integrated with the satellite, which will then undergo further vibration and thermal tests.

With 32k of IHU memory, the Phase-3C IHU could support features similar to the USAT Bulletin Board and WOC.

Current launch schedule for Phase-3C is August 1987. No firm date has yet been established.

UOSAT-Oscar-9 is five years-old
UOSAT-Oscar-9 was launched successfully by NASA on October 6, 1986. The satellite has performed its mission without failure and has been in operation continuously for five years. The satellite is currently in orbit and is functioning as designed.
P Since practically no current flows through the relay contacts in the case of the receive antenna, there must be a high resistance at the contacts, which is why the relay contacts may not be heated. However, the relay contacts must be heated before the launching of the satellite, because as long as the relay contacts are not heated, the relay contacts of the high gain antenna are electrically open, which results in the absence of low temperatures in the spacecraft, problems can occur.

N In principle, a small DC current could be sent in the relay, especially at the relatively low temperatures in the spacecraft. Unfortunately, we do not have any alternative.

A Final amplifier of the L-transponder. Upon initial operation of the L-transponder, the amplification was too little, the output power too low, and the typical distortion of Class-C amplifiers was apparent.

P Analysis of the telemetry data, especially of the data sent in the relay, especially at the relatively low temperatures in the spacecraft, indicates that quite likely the component which does not have the manufacturing and quality assurance processes is the problem. The component we have used has indicated that the resistance to temperature cycles is thereby improved. The original seal of the bottle was only designed for 200 bar; at the 400 bar used, another design would be better. Unfortunately, only bottles of the type we use are available.

d) Antennas

Several antenna rods were presumably bent as a result of the collision after launch. The ESA has undertaken all necessary steps to prevent collisions in the future. P3-C additionally has flexible two-metre antennas which are not as easily bent. However, damage during a collision is nearly unavoidable; the energy absorbed by the antennas probably prevented damage to the solar cells.

N The module for operating the propulsion system (LIU) has a design error such that the ignition time values were incorrectly interpreted by the computer. Tests on P3-C have reached the high pressure level of 4000 kPa. This problem could have been solved in software; however, due to space limitations, the LIU has been redesigned, and the crossed lines are connected at this time.

g) Sun sensor

Operation has indicated that the sun sensor sensitivity must be set very exactly; slight variations cause either a mis-triggering or double triggering.

P The problem is not correctly understood at this time. From the statically recorded graphs, the phenomenon cannot be understood.

N We are presently still building a sun sensor for further tests. These should then indicate which measures should be taken in P3-C.

h) Thermal design

The thermal design of AO-10 was conducted in the USA on a large computer. Just prior to launch, a manual calculation indicated that the design would have led to a much too cold satellite. Measures were taken prior to launch to bring the temperature as far as possible up to the desired temperature of 10 degrees Celsius. In fact, the possible measures were only sufficient enough to raise the temperature to five degrees Celsius. Experience has shown however, that one can live with this value and changes are not planned. Merely the fuel lines to the motor and the battery design have been reworked, in the first case to prevent freezing of the fuel and in the second, to reduce the gradient.

In addition to the above problems, further difficulties have arisen after a long period of operation, indicating a kind of wear due to high radiation exposure in our orbit, though in principle, they were to be expected.

a) Solar generator

Since the solar cells are mounted on the external skin of the satellite, a larger power decline is unavoidable. The solar cells have a 0.5 mm thick glass cover for shielding. Calculations predicted a 40 percent decline in power in three years. In fact, the power declined 12 percent in six months and around 24 percent in three years. After six months, we reduced the input voltage of the generator two volts compared to the optimal values prior to the launch (29 mV per cell) and have operated with this setting unchanged to this day. The power decline data are relevant for the setting. The solar generator from AEG-Telefunken has exceeded our expectations and can be employed without changes even for missions of significant further duration in an elliptical orbit. It may be that an adjustment of the operational voltage after approximately three years would lead to a small increase in power.

b) BCR

The battery charge regulator receives its voltage settings for the solar generator and battery voltage from the board computer, which sets them depending on temperature. The BCR contains DA converters whose outputs are routed into the control loops for the voltages. There are two redundant regulators present, although the DA converters are single. The DA converters are connected to the regulators through 270k ohm decoupling resistors to eliminate mutual interaction. The input current of the operational amplifier in the regulators has increased in the three years to approximately 1 uA, thereby causing drift. In P3-C, the decoupling resistors must be reduced in value to avoid this drift. In AO-10 the drift is compensated for through corresponding software parameters.

c) Memory of the board computer

There are 12 dynamic 4116 memories flying in...
increasingly worse, such that the service life of ever more errors are meanwhile occurring in the K, L, M and N blocks; the memory is becoming intervals. This measure has, to date, (August 10, approximately three years; unfortunately nothing distributed, with accumulations "high and "low."

In May 1986, the first problem and corresponded to our expectations. In November, the counter, which tallies the corrections, began to run very fast. In May 1986, the first "crash" of the computer came to pass.

At that time, a memory test indicated that a column decoder (XX01 and XX81) was defective and that throughout the entire memory errors are distributed, with accumulations "high" and "low." Subsequently, the software was reworked such that positions 01 and 81 are excluded and that the entire memory is read and rewritten in 20 second intervals. This measure has, to date, (August 10, 1986), restored nearly normal operation. However, errors were meanwhile occurring in the K, L, M and N blocks; the memory is becoming increasingly worse, such that the service life of AO-10 cannot be expected to last much longer. A "harder" memory should definitely be used in P3-C; all other systems in AO-10 would most certainly achieve a service life of six to 10 years.

3 Ground systems and software

In contrast to all previous satellites of AMSAT, the P3 satellites have a board computer which is responsible for control. As a consequence, command systems of the old type no longer exist and a dialogue with the board computer has taken their place. After three years operation with this system, there no longer exists the slightest doubt that this is our path into the future. The conversion has not happened quite as painlessly, however, as we had hoped. The command operation of the old type could be distributed "to the folks" by shipping a bale of paper. Initially we also attempted to distribute the P3 technology in this manner and leave the details of their installations to the command stations.

Unfortunately, this concept was a failure; the majority of the stations were not really operational at the time of the launch. One of the biggest problems turned out to be that the S-100 computers, in primary use by Americans, created such a strong interference level on two metres that error-free telemetry reception was not possible. It also became apparent that the training of the people was inadequate. A command training seminar was therefore held in Marburg approximately one year after the launch of AO-10. At the same time as this meeting, the price of the Atari 800XL computer fell so far that all command stations acquired the same equipment as used in AO-10, which at the time of development of P3-B were the best available memories. Since temporary errors can occur in dynamic memories due to particle radiation, the 12 bits are so employed that in each eight bit word of the computer single errors can be corrected. The software reads and writes the memory every five minutes, thus preventing an accumulation of errors. Even at the time of development, it was clear that this memory in AO-10 would only survive the radiation for approximately three years; unfortunately nothing better was available.

The memory functioned as planned until November 1985 (two and a half years) and corrected about three errors daily. This was no better was available.

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In the photograph, alongside Harry VK4HA, is Roy VK4DK. Both obtained their AOCPs together in August 1935. After a total of 102 years of radio there were endless stories to swap, with much nostalgia. (The meeting was arranged by courtesy of Roy VK4BAY).
AMATEUR RADIO, December 1986 - Page 43
Forty years have passed since many of the events on Morotai Island in wartime took place, and although I am now a service pensioner aged 69, I still have a pretty good recall of what happened there when I was a member of the Australian Press Unit, which printed the Army Island Newspaper Table Tops, and later, the Broadcasting Station 9AD.

**WHAT ARE THE MOST OUTSTANDING MEMORIES OF THOSE DAYS?**

I remember being present at one of the war trials that were held on Morotai soon after the Pacific war ended. It was not a pleasant experience.

I also recall reading by radio to General McArthur, on board the *Missouri* in Tokyo Bay, when he accepted the formal surrender. I was also present at the surrender on Morotai itself, accepted by General Blamey.

**MONKEYING AROUND**

Other memories come flooding to me also. Like the day a Borneo monkey, which was one of my mates pets, discovered an 807 valve that I had acquired and took it to the top of a tree near my tent. There he was, perched on a limb with 807 in his hand, grinning like the monkey that he was, and acting as if he would drop it if I stood shaking my fist at him. Eventually he did drop it but it fell on soft ground and fortunately did not smash!

The same monkey also had a great liking for anything shiny, such as mirrors, and he would purloin these given the opportunity if the boys left them laying around. One day we returned to our tent to find the monkey looking rather "green around the gills" or whatever monkeys look like when they are not too well. It appeared that he had taken a shine to someone's Atelbrin tablets and he looked so sick we thought he would die. But Borneo monkeys are tough little animals and he survived.

I was on Morotai for about nine months, but I imagine you will now think I am a war veteran. I was there when he invented the electric company. Edison's greatest achievement came in 1879, when he invented the electric company, and from that date onwards electricity has been generated by electricity companies. Edison's greatest achievement was that he found a way of generating electricity so that it could be distributed to homes and businesses, and this led to the development of the modern electrical grid.

**ELECTRICITY**

Today's scientific question is: What in the world is electricity? And where does it go after it leaves the toaster?

Here is simple experiment that will teach you an important electrical lesson: on a cool, dry day, uncuff your feet, walk along a carpet, then reach your hand into a friends mouth and touch one of his dental fillings. Did you notice how your finger twitched violently and cried out in pain? This teaches us that electricity can be a very powerful force, but we must never use it to hurt others unless we need to learn an important electrical lesson.

It also teaches us how an electrical circuit works. When you scuffed your feet, you picked up batches of "electrons," which are very small objects that carpet manufacturers weave into carpet so that they will attract dirt. The electrons travel through your bloodstream and collect in your finger, where they form a spark that leaps to your friends filling, then travel down to his feet and back into the carpet, thus completing the circuit.

Amazing electronic fact: if you scuffed your feet long enough without touching anything, you would build up so many electrons that your finger would explode! But this is nothing to worry about unless you have carpeting.

Although we modern persons tend to take our electricity for granted, there were many ex-servicemen, I found it difficult to settle back into civilian life and I had to fight this other kind of war in which I found myself involved.

A very Happy Christmas and 73 to all readers — Joe VK2BJX.

Eileen's card thanked Bert for his report and gave details of the frequencies and power used by this marine station.

**LISTENING AROUND**

I was on Morotai for about nine months, but I imagine you will now think I am a war veteran. I was there when he invented the electric company. Edison's greatest achievement came in 1879, when he invented the electric company, and from that date onwards electricity has been generated by electricity companies. Edison's greatest achievement was that he found a way of generating electricity so that it could be distributed to homes and businesses, and this led to the development of the modern electrical grid.

**HOMEWARD BOUND AT LAST**

At last the ship arrived to bring us home. It was the motor vessel *Kanimbila* of the McIvorah McEacharn line, formerly a passenger ship on the Australian coastal run, but now a troopship. The *Kanimbila* had a special significance for me as a prewar shortwave listener, because it had a broadcasting station on board, and I used to listen to concert broadcasts from the ship as she traversed the coast.

Bert Shire VK30Z, 81 years old and now of Mildura, was also a shortwave listener at that time, and sent the ship's radio operator a QSL report in 1937. In due course he received a QSL card from the Announcer-in-Charge, Eileen Foley. Eileen's card thanked Bert for his report and gave details of the frequencies and power used by this marine station.

Bert was kind enough to supply me with a photocopy of the card. It is also interesting to note that 9MI claimed to be the first ship's broadcasting station. Isn't it a pity there are not some of these ships still around today. It would surely add to the joys of shortwave listening.

I am sure I have missed so many deadlines but this time I am just in time to wish all Season's Greetings and thank you for the many kind words that you have made to me personally on air. My sincere thanks to all of you who could tell only others would put pen to paper and so related their experiences during WWII.

There is much more to come about my experiences in the Immediate Postwar era, and despite the fact he had little formal education. Galvani discovered (this is the truth) that when he attached two different kinds of metal to the leg of a frog, an electrical current developed and the frog's leg kicked.

This means that an electric company can sell a customer the same batch of electricity thousands of times a day and never get caught, since very few customers take the time to examine their electricity closely. In fact, the last year any new electricity was generated was 1937; the electric companies have been merely reselling it ever since, which is why they have so much time to apply for rate increases.

Today, thanks to men like Edison and Franklin, we receive almost unlimited benefits from electricity. For example, in the past decade scientists have developed the laser, an electronic appliance so powerful that it can vaporise a building 2000 metres away, yet so precise that doctors can use it to perform delicate operations to the human eyeball, provided they remember to change the power setting from "Vaporise Bulldozer" to "Deli-

So anyway, next time you get a bill from the electric company, just send it right back, with an attached note explaining, "Haven't seen it all month!" — Contributed by Len Pearson VK6LP.
WHY XYL?
I have received an interesting letter from Lloyd VK2VB, regarding the use of XYL for wife. Lloyd says that many amateurs consider XYL inappropriate terminology because, to quote from his letter, "They are all young to us." He further states that these "oldies" who dislike the term XYL use GL (Good Lady) instead.

Well Lloyd, on the other side of the coin, we use the expression OM even if the gentleman we are referring to is in his early 20s, but there is a lot to be said for your idea, and "good lady" certainly has a pleasant, old-worldish ring to it; there is food for thought there!

Lloyd grew up with Morse, and knew Mrs Florence McKenzie many years ago. He says: "Why not promote GL to the fraternity and give wives of amateurs a status. I am sure Mrs Mac would agree — I had the privilege of being associated with that VGL in 1939/40. Having been an ex-Army Cadet Signals we had a little in common. AWA York Street conducted the first RAAF radio op training school and our lunch was supplied by Mrs Mac at her Sussex/Kent Street rooms. We used to march from York Street to these rooms, which were set up with benches with Morse training facilities."

Thank you for your comments and reminiscences, Lloyd.

Maybe XYL does conjure up visions of the little woman clad in dowdy clothes and voluminous apron, surrounded by wailing children, piles of washing and dirty dishes in the sink while the OM sits serenely in his shack and works the world, (or the OM down the road).

Surely this scenario is somewhat inapt for this day and age, when more and more women are becoming actively involved in the world of amateur radio.

Fortunately for us, the general term for a female amateur radio operator is YL, whether she be nine or 90. YL appears on the ALARA logo, badge, stickers, etc., and is in fairly general usage throughout the world.

OM or GL for wife? Can tradition be changed anyway? Comments welcome!

YL CONTESTS
YL-OM MIDWINTER CONTEST
The English YL club, BYLARA; the Belgium club, BYLRC; the Dutch club, YLRC; organise this contest.

DATE — the weekend January 10 and 11, 1987.
CW Saturday, January 10, from 0700 UTC to 1900 UTC.
Phone Sunday, January 11, from 0700 UTC to 1900 UTC.
BANDS — all bands. Please use band-sections according to IARU recommendations for Region 1.
CW and SSB (no cross-mode).
EXCHANGE — station worked RS/T and QSO serial number. OMs start at 001; YLs start at 2001.
Country. Entry in log must also show time, band, date, YL or OM, number of multiplier.
POINTS — each QSO with a YL, confirmed, counts as five points. Each QSO with an OM counts as three points.
SWLs — each different heard YL station counts as five points, multiplier as below. Logs must also show the foreign station worked with.
MULTIPLIERS — one point for every worked DXCC country. Multipliers are counted only once in the contest; it is not counted on each band.
AWARDS — a certificate will be awarded to the YL and OM winner in each category and also to second and third classified stations. Certificates will also be awarded to each country winner in each category.
LOGS — to be sent no later than February 20, to Dewi Wildeboer PA3CEB, Kettingweg 3, 8281 PN Genemuiden, The Netherlands.

YL-OM CONTEST
Sponsored by YLRL
Phone starts Saturday, February 14, 1987 at 1400 UTC and ends on Monday, February 16, 1987 at 0000 UTC.
CW starts Saturday, February 28, 1987 at 1400 UTC and ends on Monday, March 2, 1987 at 0200 UTC.
OPERATION — all bands may be used. No cross-band operation. Net contacts and repeater contacts do not count. A station may be counted only once in each contest for credit. Participants may work only 24 hours of the time.
EXCHANGE — station worked, QSO number, RS/T, state/province/country. Entries in logs must also show time, band, date and transmitter power.
SCORING:
a Phone and CW will be scored as separate contests. Submit separate logs for each contest.
b One point is earned for each different station worked: YLs count only OMs and OMs count only YLs.
c Multiply the number of QSOs by the total number of different states/provinces/countries worked.
d Contestants running 150 watts or less on CW and 300 watts PEP or less on SSB may multiply the results of c by 1.25.
LOGS — must be signed by the operator and no logs will be returned. Remember to file separate logs for each contest. Logs must show claimed score and be postmarked by March 16, 1987, and received no later than March 31, 1987.
Please send logs to: YLRL Vice-President, Mary Lou Brown NM7N, 504 Channel View Drive, Anacortes, WA 98221, USA.

ALARA AWARD
Award No 120, July 31, 1986 to T K Morrison VK3DVZ.
Our Award Custodian has been receiving award applications which do not comply with the rules; eg $2 enclosed instead of $3, unsigned, not certified by two other amateurs, etc.
It seems unfortunate that awards have to be refused on these grounds, particularly in these days of rising postal charges. Please check the rules carefully before forwarding an award application to avoid disappointment. Rules have been well publicised.

SUBSCRIPTIONS
It is that time of the year again, and subscriptions are due once more. Please do not forget sponsored members.
$6 Australian member (full or associate) and subscriber.
$6 Air mail overseas member or sponsored.
$4 Surface mail overseas member or sponsored.
Please send subscriptions to our new Treasurer, Val Rickaby VK4VR, 3 Dulcie Street, Salisbury, $6 Australian member (full or associate) and subscriber.
$6 Air mail overseas member or sponsored.
$4 Surface mail overseas member or sponsored.
Please send subscriptions to our new Treasurer, Val Rickaby VK4VR, 3 Dulcie Street, Salisbury, Qld, 4107.
It was very enjoyable on a recent trip to Victoria to meet Daphne VK2DKX. We have got to know each other via amateur radio over several years, but this is the first time we had actually met. Naturally, there was much talk and plenty of cups of tea before the OM finally managed to drag me away to continue our journey. It is good to meet an "old friend for the first time, isn't it!
I would like to wish everyone a very Happy Christmas, and all the blessings of the Festive Season.
See you in 1987!
Joy VK2EBX.

EXTENSIVE RANGE OF ELECTRONIC COMPONENTS FOR THE RADIO AMATEUR, HOBBYIST & PROFESSIONAL including AMIDON & NEOISD FERRITE PRODUCTS.
- STOCK DREW DIAMOND'S 4 WATT CW TX AND DC86 DIRECT CONVERSION RECEIVER FOR 80m (see AR Jul/Oct)
- AMATEUR REF BOOKS (RSGB & ARRL HANDBOOKS), VHF MANUALS, ANTENNA MANUALS & MOTOROLA NATIONAL DATA BOOKS
- FULL RANGE 27 MHZ & 477 MHZ CB RADIO & ACCESSORIES
- UNIDEN SCANNING RECEIVERS
- COMPUTERS
- WELZ TP-2SA 50-500 MHZ DUMMY LOAD — POWER METER
While recently addressing a radio club in VK3 on what was a "potpourri" of amateur radio, several lines of thought were brought to light that provide a basis for this article.

The subject was raised by comparing two graphs (Figures 1a and 1b), the amateur population versus total national population. One glaring conclusion is that the amateur service attracts or consists of middle-aged or older citizens and that, for some reason, we are failing to attract this country's greatest resource — its youth. If we want to attract youth into our hobby, we must move to accommodate this interest — not stand off and adopt the attitude that we will accommodate them when they come to us on our terms. And, of course, many of today's youth cannot afford Personal Computers either. In the school where I teach, the student population of 550 probably boasts fewer than 15 to 20 Personal Computers. If we are genuine in our belief that amateur radio is a pursuit that has a lot to offer today's younger generation then we need to consciously strive to ensure not only does the hobby ignore political barriers, but it is not restricted by socioeconomic barriers either.

The second interesting point to emerge was the radio club's belief that there was already enough avenues into amateur radio without adapting any changes to our current licensing system. I am not sure of their logic because the evening was not dedicated to this single issue, but the issue is surely as simple as setting up the maximum number of entry points into our hobby, whilst ensuring maintenance of standards and protocols that the majority of amateurs see as important. A broader access to our hobby becomes the more likely we are to attract outsiders into our ranks — both young and old.

The third issue addressed was how do we sell ourselves to the public, but youth in particular. If indeed today's youth are heavily into Personal Computers, then the first stop should be a soft-sell via computer bulletin boards, something the WIA could well address, as well as club members with access to bulletin boards. Schools are another starting point — perhaps not only in the traditional, amateur address students, routine but by using courses such as VK3s STC, a Year 12 student negotiated curriculum course or as an integral part of Year 10/11/12 electrical or electronic practice. Once again, a little investigation from each Division in association with their State's education authorities should reveal new avenues into schools.

To be a successful hobby we must move to accommodate this interest. The hobby Ignoring political barriers, but it is not restricted by socioeconomic barriers either.

The use of CW is permitted on the VHF and UHF bands by holders of the AOLCR. This is not news — and has been previously published in AR magazine and included on WIA broadcasts. However, comments at recent club meetings and on air show that some AOLCR operators are still unaware of the change which gives them the right to use CW.

Many have been heard operating with CW either to get their speed up for the DOC examination or as an added mode for working DX.

**Table 1** — What 16 year old can afford this:

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-731</td>
<td>RRP $1554</td>
</tr>
<tr>
<td>FT-757</td>
<td>RRP $1295</td>
</tr>
<tr>
<td>FT-2008R</td>
<td>RRP $489</td>
</tr>
</tbody>
</table>

"Down Market" perhaps:

- 80 metre transceiver $350
- Rotators from $280 to $500
- Triband Beams just $429

Even Cheap Verticals:

- $150
- Coaxial Cable at $180 per roll

**TOTAL? $2000 plus perhaps?**

The response often forwarded is get them started with simple CW gear on 80, or they can afford computers so they can afford radio gear. Both responses show conservative and backward thinking. How many people reading this article are 80 metre CW operators only, or would be happy to be? And, how many of you are 16 year olds? A 16 year old would see this as a move back to the ark. Because it was good enough for you 30 years ago does not mean the logic still holds. The second point may be valid, but as VK2ZT and VK3PC point out in their AR article, if Personal Computers are where the interest of today's youth lies then we must move to accommodate this interest — not stand off and adopt the attitude that we will accommodate them when they come to us on our terms. And, of course, many of today's youth cannot afford Personal Computers either. In the school where I teach, the student population of 550 probably boasts fewer than 15 to 20 Personal Computers. If we are genuine in our belief that amateur radio is a pursuit that has a lot to offer today's younger generation then we need to consciously strive to ensure not only does the hobby ignore political barriers, but it is not restricted by socioeconomic barriers either.

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Well, another year has come to an end! There have been few surprises and a number of disappointments, mostly related to poor propagation. There have been a few new stations on the air, while some services are being curtailed. Fortunately, I believe that conditions are slowly improving and these summer months should see the higher frequencies more active, especially during the late evening hours. This will make up for the atrocious QRM on the lower frequencies from all the electrical storms, which will render these bands virtually unusable.

**RE-BROADCASTING**

At the beginning of October, we saw the commencement of re-broadcasts of Radio Japan (NHK), in Tokyo, from the Sackville site of Radio Canada International. This is a result of a cooperative agreement signed by the representative governments. RCI has been engaged in re-broadcasting both the BBC and Deutsche Welle, to North America, for many years. So it is not new to them. Radio Japan has also been using the facilities of Radio Gabon — Africa No 1 — to get their signals into Europe and Africa.

On October 1, the first transmission went out on 6.120 MHz, at 1030 UTC, directed to the east coast of North America and surprisingly, was well heard here in Tasmania, which is well out of its target area. The program was 30 minutes in Japanese and 30 in English. Incidentally, the same program is going out on 7.140 and 11.815 MHz simultaneously from the Yamanta site, beamed to south-east Asia. When North America went off, the Yamanta site continued, and the broadcasts were aired one hour later. Radio Japan consistently comes in strongly, broadcasting to Australia on 15.235 MHz from 0500 UTC in Japanese and English.

**GETTING THE SIGNAL THROUGH**

The BBC, earlier this year, commenced utilising the Far Eastern Relay Station in Singapore, to get their 0600 release to Australasia through, because signals from the UK bases were not getting through. They are still using 15.360 MHz from 0600 until 0915 UTC, with this arrangement. Now they have been forced to utilise one of the old faithful channels from another site, because of the delay. Channels 8 and 10 go to Channel 6 UTC, or the Antigua base in the Caribbean now has moved onto that channel from 9.510 MHz, where it had previously been suffering co-channel interference from an Algerian station that was 1 kHz low, causing a very nasty heterodyne. And the move has paid off.

**WATCH FOR CHRISTMAS PROGRAMMING**

Do not forget the special Christmas programming that the BBC World Service usually emit during the Yuletide Season, culminating with the Queen's Christmas Message at 0930 UTC. This is usually followed by the very beautiful Festival of Nine Lessons and Carols from Kings College, Cambridge. Other stations will have special Christmas programming, especially Radio Vatican, with a broadcast of Midnight Mass from St Peter's Basilica and the Midnight Mass from the Church of the Holy Nativity in Bethlehem is often relayed by Kol Israel in Jerusalem.

I do not have the approximate times or frequencies available at the present time, as this is being written in mid-October. So a little eavesdropping will be in order around Christmas Morning, from 2200 UTC until 0130 UTC on the 25 or 31 metre bands.

**IT'S GOING TO HAPPEN**

In a recent column, I happened to mention that it was rumoured that the Christian Science Monitor was going to purchase KYOI — Super Rock. Well, this has, in fact, happened. I have not heard KYOI lately so perhaps they are preparing for the conversion to come on-stream about the same time as the State-side operation is going to commence, early in 1987.

**NDEX (pronounced In Dixie)**

Yet another station that is not on-air! The much-vaunted NDEXE, which was supposedly going to transmit with AM-Stereo on HF has not appeared, and the consensus amongst the State-side fraternity is that it might not, although it is heavily into promotional material, eg cups, licence plates, 3D holographic card and other trinkets. Most will believe it when they hear it! By now, it may be on the air, but don't hold your breath waiting.

**THE MOST . . .**

One station that I would vote as the most impressive broadcaster in 1986 would be RTV Beijing. Compared to programming 10 or 15 years ago, there was more rhetoric and not much worth listening to. RB today is quite refreshing and interesting, with programmes written by their own staff and highly professional. 

**QSP**

**VHF HAPPENINGS IN VK6**

Two-metre contact was established between Darwin and Koolan Island, when Dougall VK4KUYV, using 30 watts through a nine element Yaesu, worked VK6NS on September 11, from 1200 to 1255 UTC and again on September 11, at 1545 UTC. Stations Dougall worked included VK8s ZWM, LM, DI, ZED, PC, DA, IT, AE, ZG and ZS.

A first for two-metres was created when Brian VK6IAH, Port Hedland, worked Ron VK6UF on Koolan Island. Ron recently bumped his output to 200 watts on FM. Carnavon Repeater, VK6RCA has been operational on 146.075 MHz input and 146.675 MHz output. Jim VK6CA, had the repeater running from 0900 UTC until 2300 UTC on September 10, from 1200 to 1255 UTC and again on September 11, at 1545 UTC. Stations Dougall worked included VK8s ZWM, LM, DI, ZED, PC, KJ, FL and ZS. The VK6RCA has been operational on 146.075 MHz input and 146.675 MHz output. Jim VK6CA, had the repeater running from 0900 UTC until 2300 UTC on September 10, from 1200 to 1255 UTC and again on September 11, at 1545 UTC. Stations Dougall worked included VK8s ZWM, LM, DI, ZED, PC, KJ, FL and ZS.

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MONTHLY OLD TIMERS NET

Despite poor band conditions, the monthly News Bulletin and call-back has been well attended. Thanks to the efforts of the Net Controller, Mac McConnell VK3RV, and his team, the monthly news broadcasted on three frequencies: 7,060, 3,624 (transmitted by Eric VK3KF and copied by many interstate stations), and 14,700 MHz FM, for Melbourne listeners only.

The net is on the first Monday of each month, commencing at 2300 UTC. Call in and join the Club.

The President, Secretary, and Committee Members of the RAOTC wish to thank all members for their efforts in making the year, 1986, a very good one for the Club. We wish you and yours a very Happy Christmas and a New Year filled with joy and peace.

The RAOTC Secretary Treasurer, Harold Hepburn, would like to thank members for donations made over the last few months. We are very appreciative of these! Our finances are not shaky, but sometimes a little on the parsimonious side. We do appreciate the recent donations from Austin VK2KZ, Allen Douglass VK2XG, Ron Anderson VK3JL, and Keith Valentine VK3AKB. Thank you gentlemen, for your efforts.

ODE

Lives there a ham with whom one is dead
Who never to himself has said
"What in heck has that mailman done
With the card from Contact Number One?"

VALVE BANK

This is not like the Blood Bank, it is more like a Heart Bank if you have a piece of equipment that needs a valve transplant. It is being run by Ron Highbottom VK3RN, who is collecting donations of old valves, testing them as far as possible, and making the usable ones available for sale at 50 cents for receiving types and $1 to $2 for transmitting types — with a "money-back" guarantee.

The proceeds go to club funds. If you could use a spare valve, see Ron; or if you have a box full of old valves that you do not have the heart to throw out, Ron will be pleased to take them off your hands.

RAOTC LUNCHEON

The Annual Victorian Luncheon of the RAOTC was held on Wednesday, September 24, at the Melbourne City and Overseas Club. It was well attended with 39 members being present. This was a purely social event and all enjoyed the cuisine and meeting old friends and new ones.

RAOTC President, Max Hull VK3ZS, was Master of Ceremonies. Apologies were received from 11 members from three States. Max told us that Gavin Douglas VK3YK, had suffered a mild stroke, but is now recuperating. He assures us that he will be attending our next function and sends best wishes to all of his friends. Best of luck to 3Q3L for a speedy recovery, from your RAOTC friends.

Graham Sutherland VK3AGS, a recent member, attended this function and was "welcomed by the President and all members, 73 to you Graham.

Max Hull told members a very pleasant and interesting story. Jim Marshall VK3NY, was located at Point Easton and was a very early editor of Amateur Radio magazine and continued this well into the post-war years. His son, Allen, who is a school teacher at Mount Beauty, has now completed his full licence and has been allocated his father's call sign, VK3NY. Congratulations Allen and Old Timers will look forward to hearing you on the air.

Allan Dobie VK3AMD, gave an interesting talk on a subject most amateurs know well — that is QRM from television sets producing interference on the amateur bands, mainly on the 1.8, 3.5 and 7 MHz bands. Help is needed from suitably equipped amateurs who may be able to investigate these problems and you can help, please contact Allan Foxcroft VK3AE.

There were no official speakers at this luncheon, but Bill Gronow VK3NG, provided some very humorous anecdotes concerning early Wireless Institute exhibitions and the problems involved and solved. He also spoke about going aloft in an DH89 aircraft to sort out the problem with the transmitter. This was done, but the pilot overshot the Essendon Aerodrome and caused havoc with the poultry farm at the end of the strip!! However, second time around they landed safely and all was well.

Ivan Hodder VK3HR, also had a story. He was a Radio Inspector in 1939 and was asked to install a series of radio towers between Alice Springs and Darwin. He was working by himself and some of his stories about the problems of using local help were very funny indeed. He once joined a Lockhead 10A draft for a flight to Darwin. He offered his services as radio operator to the two pilots, but because of a mix-up, the pilots thought that he was also a pilot and the result was that he was left in control of the twin-engined plane for a considerable period, even though he had never flown an aircraft before. He found it most enjoyable; however you could imagine how the pilots felt! I don't think they did this!! This story of Ivan's brought the house down.

Our net controller spoke briefly about the new net frequencies after which this very successful luncheon came to a close.

RAOTC NOTES

We are a little ahead of ourselves, but would like to advise members that the Old Timers Dinner will take place on Thursday, March 5, 1987 and will commence at 7 pm. The venue and the price of the Dinner have not yet been decided, but members will be advised about these soon. Mark it in your diary — March 5, 1987 The Old Timers Dinner!

PERSISTENCE

Nothing in the world can take the place of persistence.

Talent will not — nothing is more common than unsuccessful men with talent;

Genius will not — unrewarded genius is almost a proverb;

Education will not — the world is full of educated derelicts.

Persistence and determination alone are omnipotent, very omnipotent.

The slogan "Press On" has solved and always will solve the problems of the human race.

—Alleged to have been written by Teddy Roosevelt of the USA

THE WORLD'S LONELIEST RADIO

Located in the Coral Sea, about 400 miles east of Townsville, Queensland, is a small coral island about 500 yards wide. This is Willis Island, the home of the world's loneliest radio station. On this island for a year at a stretch, live two radio operators who have weather instruments and transmit them to the mainland. By this means the Weather Bureau is able to forecast cyclone warnings, and weather forecasts at least 24 hours before they would otherwise be possible to do so.

The station has been in operation for about 10 years. For the last couple of years, the monotony has been relieved by the installation of an amateur radio station with the call sign of VK4SK. For six months, the operators see no other human besides themselves and the only company is that of the terns, noddies and gannets, which come to nest in thousands. (The birds return for egg-laying at the same time each year, within a day or so of the same date, year after year.) Amateur radio enables the operators to obtain news of their friends and relatives and it is the pleasing duty of VK4SK and some other stations, weekly. The transmitter at VK4SK is a TPTG, using about 100 watts to a DET 1 tube. The power supply consists of a petrol driven generator and the QRT is a typical 50MHz, author, amateur experimenter, marine stations. Work is done on the 3.5, 7, and 14 MHz bands and American listeners would do well to watch for this station on 7 MHz each Wednesday at 7.45 pm Sydney time and on 14 MHz at 1.45 pm on the first and third Sunday of each month throughout the year.

The island is surrounded by a coral reef, is 22 feet thick, and a man made island is currently activated by VK3ZR on all bands including six metres. Information about the transmitting times can be obtained from Jill VK6YL, who also handles QSLs.

WAVELENGTH, FREQUENCY AND LC VALUE CHART

Back in the middle of the 20s, 'wireless' was booming and hundreds of people built their own receivers. The term 'wavelength' was more common than today. An LC circuit is a combination of inductance (L) and capacitance (C) which is in parallel. The wavelength is more important than the value of capacity and inductance to tune a required wavelength — let alone understanding the 'Q' of a tuned circuit — was a giant calculation for many. To assist people with the necessary calculations the chart illustrated here was published in the magazine Science and Invention April 1926 issue. This magazine, edited by the famous author and experimenter, Hugo Gernsback, had combined with an earlier magazine, called the Electrical Experimenter. Later on, these publications became known as Radio News, but perhaps that is another story.

In the aforementioned issue of Science and Invention was a column known as 'Radio Oracle which was a department of the publication's enclosure constructed by the operators. Sparse time is spent studying, playing golf with sticks and tennis balls and swimming. As the temperature averages about 26°C year around, popular and Willis Island fashions generally consist of shorts and singlets with perhaps a beard if the wearer prefers to shave. However, the indigenous people of Willis Island, the Emu and ground brass at an amateur station like this? No local QRM or background noise! Look for VK4SK and work the world's loneliest amateur station.

—Written by Ray E Abbott VK2YK and published in QST August 1932

(The January 1985 issue of Amateur Radio magazine described Willis Island is currently activated by VK3ZR on all bands including six metres. Information about the transmitting times can be obtained from Jill VK6YL, who also handles QSLs)

Radio Amateur Old Timers Club

Kevin Duff VK3CV
Publicity Officer
Radio Amateur Old Timers Club

Page 48 - AMATEUR RADIO, December 1986
The chart for determining wave-length, frequency and LC values often comes in handy for use in various radio calculations. Clip this table out and keep it for reference.

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<th>LC Value</th>
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Electronics Today is Australia’s dynamic electronics monthly. It has more special features, new and exciting projects to build and a wealth of information on components, equipment and new technology. Regular features include Australia’s top hi-fi reviews and news on communications and computing. Buy your copy now from your local newsagent, or become a subscriber and have the magazine home delivered. Only $35.40 for 12 issues. Send your cheque to: Subscriptions Department Federal Publishing P.O. Box 227 Waterloo, N.S.W. 2017

Ph (03) 431 1153
Terry and Gary (VK3ZHP)
DC POLARISATION PROTECTION FOR MOBILE RIGS

Bob Gheeves VK7KZ, of Hobart, has provided insight into consumer products where the customer is always right, but the electronic evidence provides conclusive evidence that it was not the case.

Bob provides a simple modification carried out on a CB rig that forces the user to get it right!

Here is Bob's suggestion, noting that it is only applicable for equipment that does not have the negative supply connected directly to the equipment case.

Most readers will be aware that the DC input circuits of most CBs, mobile amateur rigs, marine electronics, etc have reverse polarity protection in the form of a diode across it to cause the fuse to blow if connected incorrectly.

In my experience, over many years of servicing such equipment, the most common fault is just that.

Whether it has been that the battery has been taken out and replaced in a vehicle the wrong way around (yes, some people even open up the negative terminal and squeeze the positive to fit!), sheer ignorance of what red and black means, the more frequent use of two red leads, one with a black trace along it causing confusion, it happens regularly.

I had a case some years ago where a unit came in smelling badly of burnt wiring. On inspection, it was found that it had an unblown 35 amp fuse in the power line, the polarity protect diode had melted in half, the power leads inside the set had been on the verge of fire, and tracks on the PCB had changed colour.

This was a typical case of the wrong polarity. The diode had caused the original two amp fuse to blow. The customer replaced it with one size bigger and tried again. The diode by this stage was dead-short, so it blew the second fuse. A 35 amp fuse was installed, the power hooked up again, and "smoke appeared from inside the set with funny crinkly sounds."

Time to take it to the doctor.

I repaired the unit and told the customer that it had been put on the power back-to-front.

I also explained that it would have been worse if he had switched the set on, because luckily the protection diode was before the ON-OFF switch, so the reverse polarity did not get to the rest of the set.

Next day, back it came. The customer was extremely angry having to bring it all the way back from the country.

Sure enough, same problem. I fixed it again and told him once again it was connected back-to-front, and to please check which is positive and which is negative.

A newly educated customer left happily, I hoped, as I only charged for the new diode — no labour.

The next day he was back! "Same thing happened — b... y fuse blew, but I did not try any more and I checked the polarity thing!"

I thought I would be smart and put a diode in series with the positive power input before the protect diode. At least it would not go if reversed, and would not do any damage. Away he went after I proved to him that it worked.

Next day he was back again! "The fuse didn't blow, but it won't go at all when you switch it on!"

This is when I decided to install a bridge rectifier in the power input, so it would not matter which way the power was applied and the set would still work. The set worked okay the next day so I had a happy customer (with a weird vehicle). He rang to give me the good news.

I have used this method regularly since that memorable week, and the hassle of arguing with customers has vanished. I would recommend it to anyone who has any electronic equipment that is connected and disconnected regularly for a DC source, as it can save a lot of heartache.

The choice of the bridge will depend on current drain of equipment. Five amps would be suitable for some car radios, small echo sounders, CBs and cassettes. (Be warned however, that this is only applicable when the negative lead is not connected to the case — Tech Ed). For larger current equipment, a 35 amp bridge could be used, but be sure to bolt them to somewhere suitable for heat transfer.

The power input goes to the normal AC input to the bridge, and outputs from +ve to -ve rail.

(The protection diode is now somewhat superfluous with Bob's modification, but, of course, it can be left in as a "belt and braces" approach — Tech Ed).

**AWARDS**

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St Georges Rectory, Alberton, SA, 5014

AWARDS ISSUED RECENTLY

**DXCC**

PHONE

349 Ken Watson VK2CKW
350 Ian Thomas VK3DNC

**CW**

127 Ian Thomas VK3DNC

**VHFCC — 52 MHz**

118 J A Roberts VK1ZAR

**WAVKCA**

1501 Jim Takamatsu JF2FMP
1502 Nicholas E Moon ZS6BBY
1503 Nariaki Murasato JH6CDL
1504 Osamu Kobayashi JH3CBN

**WIA 75 AWARD UPDATES**

Certificate No 660 — Made Aryasa HC3HIB
Certificate No 681 — Zenon Pietrzak SP6FER

**PERMANENT AMATEUR IN SPACE??**

Representatives of NASA, AMSAT and ARRL met recently to initiate a long-term program which could lead to amateur radio literally being built into the NASA Space Station.

A working group was formed to develop the basis for a plan which would lead to a formal proposal to NASA during 1987.

—Abridged from The ARRL Letter September 29, 1986.
Amateur Radio, column. Arrangements are not final as I write this, take over and bring a breath of fresh air to the
seeking a "leave of absence," not least of which is
established by putting that side to earth. Signals
earth return. If the line went open circuit on the
from Wagga Wagga to the end of the line, with
that line after WWII for Post Office staff. Full time telegra-
the good news is that a number of readers were
proved that CW message handling is faster
but it is my sincere hope that someone else, who
radio publications at the time, and I felt that
dence received over the years, I am proud to say
thanks to all of you, and I hope you will offer a
they might become good, effective and enthusi-
(Coming Round the Bend)
but an aid for therapists and teachers who work
needs.
Magnificat” care of Tony Smith G4FAI, 1 Tash
Bergen op Zoom, Holland. Cash is preferred to
as Morse addicts. The intention was to find and bring
Netherlands, with an English version edited by
Netherlands.
found a new international
Tony G4FAI, has advised of a new international
medals and certificates for efficiency similar to
duce into the telegraphic service a system of prize
in every branch. The test examinations will take
medals to the second best. Similar medals
classes. In the first class, a gold medal will be
awarded to the best transmitter of messages, and
silver medal to the second best. Similar medals
will be awarded to the best and second best receivers of messages. A special gold medal will be
given to the operator who proves his superiority
in every branch. The test examinations will take
place about November... It is the intention of the
Postmaster-General to also award a gold and
silver medal for the best and second best essay
on the progress of electrical science during the
present year...
What a clever idea! Of course, that was back in
the days when initiative was rewarded, not taxed.
Thanks again for your attention and interest
over the last few years. My very best wishes for
an enjoyable holiday season, and 73 until we meet.

FRED READY TO HELP DISABLED

Fred was designed with the
object in mind to produce on the
market.

It is called the friendly rehabilitation and edu-
cation device (Fred). The basic design allows for
compatibility with the hobby, illustrations, but production is made for tailor-made switching to suit special
needs.

From inception, Fred was designed with
the needs of the disabled in mind. It is
not a standard consumer product modified,
but an aid for therapists and teachers who work
with the disabled.

It produces colourful displays moving at graded
speeds on any standard colour television receiver.
Program cartridges will offer a variety of games,
educational packages, and exercises, each with
selectable levels of difficulty and skill.

—Condensed from electronics news September 1980
The West German electronics magazine *Funkschau* published in 1974-75 a number of papers on EMC technology. The aim was to inform the public about the need for electronic entertainment equipment and other appliances designed so that the equipment is immune (sufficiently selective) to legally transmitted signals from other services not meant for entertainment. These publications described:

- EMC television receiver front-end
- Selective antenna preamplifiers
- FTZ (DOC) testing methods (approval of manufactured and imported appliances)
- FTZ (DOC) EMC standards

They also included:

- Addresses and telephone numbers of 72 radio inspectors' offices
- Names, addresses and telephone numbers of 121 appliance manufacturers and importers who had offered to assist in EMC problem cases

All this work was done more than 10 years ago and the many technical problems solved, as the following publication shows:

*Funkschau*, No 24, 1974 by the late Egon Kock DL1HM translated by Hans Ruckert VK2AU

**RF Radiation-Immune Colour TV Front-end**

Television sets may be affected (TVA) by unwanted RF radiation, which may be picked up by the television chassis, the television aerial, the mains power line or via the attached cables and appliances (VCR, HI FI equipment, computer etc).

The **Immune TV Tuner**

(A Grundig circuit, Figure 1, typical of 1974 West German design)

It is important that television front ends are equipped with a high-pass filter with 48 MHz cut-off frequency and input band-passes for television band I, band II and UHF. The filter response should have a steep cut-off slope to protect the control electrode of the RF stage transistor. These, and sometimes needed add-on filters, work only as intended if the chassis earthing points have been correctly chosen (provided there is a metal chassis). It is also important that protective diodes, used against atmospheric discharges picked up by the antenna, are placed correctly to avoid rectification, modulation and production of harmonics. The circuit shows a shielded high-pass filter at the antenna terminal, which attenuates all unwanted signals below 40 MHz from short-, medium- and long-wave transmitters. Not all manufacturers do this.

Consequently, the pin diodes Di-51, Di-52, Di-54 and the protective diodes Di-56 and Di-57 cannot cause interference. We find next a series tuned L-C trap with C-57, which is tuned to 145 MHz to suppress two metre amateur radio transmitter.
The transmitter was single tone modulated on the output voltage to the television antenna terminal. A 6 dB power splitter connects the transmitter. 2000B are connected to a 60 ohm dummy load. A diodes Di-59 and Di-62 (television band I and band III) on 3.6 MHz, no TVA on Grundig Television transceiver and Preamplifier as unwanted transistors can only take 15-20 mV. Any remaining unwanted signals are further rejected by the following passband filters, which are tuned by capacitive diodes. Figure 2 shows the television front end selectivity achieved. It shows also the 30 dB dip caused by the 145 MHz trap. An easy to plug in additional high-pass filter with 48 MHz cut-off response is being made available, as also is a high-pass filter for above 175 MHz (if VHF band I is not used), to deal with extremely difficult cases.

Direct RF Pick-up by the Chassis Components and Leads

The most important step was the total shielding of the complete IF amplifier, to which the shielded tuner is connected via a short coaxial cable. It was also necessary to use ceramic feed-through capacitors to remove RF from the tuning voltage lines of the electronic tuning circuit. Of extreme importance was the selection of the correct earthing points for the various circuit groups and their connecting leads and coaxial cables, to avoid bypassing of the tuned circuits and filters.

Testing of Immunity at Radio Amateur Frequencies

Figure 3 — Grundig method 1974-75. The transceiver FTDX-500 with the linear amplifier FL-2000B are connected to a 60 ohm dummy load. A 6 dB power splitter connects the transmitter output voltage to the television antenna terminal. The transmitter was single tone modulated on the 80 metre band, but there was no picture or sound interference despite the 100 volt RMS transmitter level.

Similar results were achieved using a ground plane transmitter antenna (a dipole for 80 metres) only 1.9 metres away from the television antenna, and the transmitter operating with maximum power on the 40, 20, 15 and 10 metres bands. With 600 watt ERP at 145 MHz and about seven metres antenna separation resulted also in TVA free operation.

EMC achievements of this degree obtained by Grundig and most other West German manufacturers were of course not only appreciated by radio amateurs and their neighbours. The radio inspectors of the postal department (FTZ/DOC), service departments of television manufacturers, and the service men of appliance dealers saved time and money, often frustrating, jobs finding the cause of TVA (also TVI and ITV) while trying to improve the compatibility (selectivity, immunity) of television sets and other appliances or services. But there were fewer cases for the lawyers!

More recent development showed that with improvement of the chassis earthing point selection similar EMC values could be achieved with fewer components. Readers may compare this television circuit with that of their own models. Colour television sets are not advisable to conduct the EMC test described above with 100 volts of amateur band RF at the antenna terminal. The television front end may "go up in smoke!"

Even now some people are reportedly trying to bypass or to water-down the immunity standards. That is why DL9AH (CQ-DL 7/1986) recommends to all amateur radio receivers and TV receivers using individually shielded plug-in modules on a metal chassis. Correctly chosen earthing points and this shielding avoid RF pick-up by the chassis and leads. This results in a very high immunity level.

Figure 5 — The compact colour television chassis of a Nord-Mende receiver with individually shielded plug-in modules on a metal chassis. Correctly chosen earthing points and this shielding avoid RF pick-up by the chassis and leads. Results in a very high immunity level.

A Call to all Holders of a NOVICE LICENCE

Now you have joined the ranks of amateur radio, why not extend your activities? THE WIRELESS INSTITUTE OF AUSTRALIA (N.S.W. DIVISION) conducts a Bridging Correspondence Course for the AOCPL and LAOCPL Examinations. Throughout the Course, your papers are checked and commented upon to load you to a SUCCESSFUL CONCLUSION.

For further details write to:

THE COURSE SUPERVISOR
W.I.A.
PO BOX 1066
PARRAMATTA, NSW. 2150
(109 Wigram Street, Parramatta)
Phone: (02) 669 2417
11 am to 2 pm M to F and 7 to 9 pm W.
TEFLOCK CONNECTOR
Teflock PL259 connectors, marketed by Captain Communications, fills the need for a high quality UHF and HF connector for RG58 cable. Unlike older designs, the Teflock can be secured in seconds, without soldering or risk of shorting. The centre conductor can be crimped or soldered, enabling quick, easy fitting away from the workshop. The braid and outer sheath are held to the connector by the shield lock.

For the novice, or anyone who is not expert at making up cables, the Teflock is the only connector worth looking at. Its high temperature Teflon insulator will not surrender, even when attacked by monster soldering irons!

The Teflock is Australian designed and manufactured, is actually cheaper than imported PL259 plugs and is easily re-usable.

For further information and pricing contact David Gill, Captain Communications, 28 Parkes Street, Parramatta, (02) 633 4333.

EASY RTTY ON A COMPUTER
The latest version of the MFJ-1224 RTTY/ASCII/AMTOR/CW computer modem is now available from GFS Electronics.

Designed to interface between a computer and radio transceiver or receiver, the unit will allow coupling of all the above modes when appropriate software is used. As supplied, it is ready to go to air on a C-64 or VIC-20 personal computer. CW/RTTY software and cabling is provided.

A unique feature which enables readability in extremely noisy conditions is a sharp eight-pole active filter preceding the receive detector which serves to clean-up a bad signal before presenting it to the detector.

The modem copies on both mark and space-tone, not just mark-only or space-only. Tuning in a signal is made very easy with a special built-in two LED tuning indicator. A wide range of transmitter keying facilities are provided, along with TTL and current loop outputs to drive a mechanical RTTY machine.

For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, (03) 873 3777.

YAESU TRANSCEIVERS — FT-23R/73R; 727R & 767GX
The FT-23R and 73R are ultra-compact, microprocessor-controlled handies that offer the convenience of very small size and lightweight without limitations of features and performance.

Both units feature 10 memory channels which each store repeater shifts, busy channel and priority channel scanning, 1 MHz up/down stepping and a top panel rotary dial for memory and frequency selection. The LCD display includes a bargraph S/PO meter.

The FT-23R covers 144-146 or 144-148 MHz, whilst the FT-73R covers 430-440 MHz. A full range of accessories is available.

The FT-727R is a completely self-contained VHF/UHF FM hand portable transceiver providing up to five watts or 0.5 watts RF output on user-selectable channel steps across both the two metre and 70 cm FM amateur bands. A full range of options are also available for the FT-727R.

The logically grouped controls on the FT767GX make it easy to use, although on first appearances the unit’s front panel is a mass of “whiz-bang” knobs and buttons. It is a HF/VHF/UHF all-mode transceiver.

The FT767GX has through-chassis duct flow cooling which allows continuous key-down transmission for up to 30 minutes. No external heavy-duty power supply is required and the entire top half of the unit is diecast aluminium. A built-in automatic antenna tuner is incorporated in the unit: if the SWR exceeds 1.2:1 the tuner automatically rematches the antenna.

For further information and prices of these Yaesu transceivers contact Bail Electronic Services, PO Box 506, (or 38 Faithful Street), Wangaratta, Vic. 3677. Telephone (057) 21 6260.
Buying a new CD player?
Then look at our table of what’s on the market.

How India has taken to amateur radio with a vengeance.

South Australia: our high tech oasis.

What was the ATN-7 Sydney Racecam team doing around the Indianapolis 500?

Projects to build

- 16-bit computer
- Noise reduction system
- Lotto selector you shake
- 300 W power supply

The manufacturers of R.F. Aerospace, Antenna Systems would like to thank the following people and companies that have given invaluable help and assistance in the development of the most sophisticated antenna products available in the world today.

VK2SG
VK4JY
VK2XDE
VK2ANS

VK2EG  VK2BNN  VK2CDD  VK2DAY  VK2XKK  VK2XS
VK2DUC  VK2YBX  VK2CBJ  VK2XKJ  VK2XRC  VK2DLE/BN

Carl Holden, Mr Greg Ackman, Mr Peter Pride, Mr Mark Shaw
Mr Ron Kingston, Mr Robert Wilson, Mr Jim Milton, Mr Frank Kermeci;

The CSIRO, The Department of Communications, Mobile One Pty Ltd, Dick Smith Electronics Pty Ltd, Ham Radio Outlet — USA, Andrews Communications, Adventure Broad Casting Company, Auslec Australia, Alcan Australia, The University of NSW, High Tech Auto Tools Pty Ltd, VK2AFS and staff.
The Sydney Amateur Digital Communications Group (SADCG) has been involved in the task of implementing the CCITT X.3 Terminal Interface Protocol (TIP) into the existing Amateur Packet Radio AX.25 Protocol. The SADCG is the first group in the world to do this, and the Vancouver Amateur Digital Communications Group (VADCG) has implemented the X.3 TIP into the Vancouver Protocol.

Currently, the AX.25/X.3 version is only available to users of VADCG Terminal Node Controllers (TNCs), but it is expected that TNC manufacturers will adopt the X.3 TIP standard, which will be common in the future AX.3 version along with some extra commands that are only found in an amateur radio environment. The CCITT X.3 TIP recommendation is most commonly used in commercial packet systems.

September saw the renaming of the alternate auction as the Bill Shakespeare Auction in appreciation of the tireless work Bill VK2AGF has given to the club since it was formed in 1971, particularly with the auctions. Because of the increasing size of the auctions, it has been decided to change them from weekend evenings to a Saturday afternoon.

Now on the downhill run for the year, the club still has the Annual Dinners and Christmas Picnic to come before it all starts again in 1987.

The members of the St George Amateur Radio Society would like to wish everyone a Merry Christmas and a Happy New Year.

—Contributed by Peter O’Connell VK2EMU

VICTORIAN DISABLED CITIZENS' AMATEUR RADIO GROUP — VK3APU

The radio club is in the process of a membership drive to get the operation of the club set up in the eastern suburbs of Melbourne. An invitation is extended to disabled people and people generally, to take an interest in amateur radio.

The club seeks new members to form a new committee to run the club under the support of the Victorian Disabled Citizens' Association. The club requires a venue to be set up, close to rail transport and asks for suggestions as to where the club may be established. It must be noted that a suitable venue must have lockable security for the storage of club property under the Department of Communications rulings. The radio club has equipment ready for use immediately it has a venue, however it is in need of a full call licenced radio amateur to act as the club's nominee in accordance with regulations.

To bring these objectives to fruition, the club invites interested parties to come together at an agreed time and place to discuss matters relating to the club's functions.

Interested people may contact the club by writing to: Michael Byers, President, Victorian Disabled Citizens' Amateur Radio Group, PO Box 468, Ringwood, Vic, 3134, or telephone Michael Byers on 722 1645 or Kelvin Lee 391 6310.

The Disabled Radio Amateurs' Club has been operational for over 13 years and has achieved a great deal of success. It is therefore envisaged that the Victorian Disabled Citizens' Amateur Radio Group will achieve the same successes.

—Contributed by Kelvin Lee VK3ZSO, President of DRAC and VDCARG

DEVL News from the North-West

There were 16 members and two visitors in attendance at the last meeting of the club. Applications were received from VK7ZAP, KH, FN, AX and Florian Biner, who is on a visit home to Switzerland. A warm welcome to new member, Gordon Par. Gordon is interested in the technical side of radio and micro-computers.

The business side of the meeting was dealt with swiftly and a very interesting evening of discussion followed. Final details were discussed for Campbell Hil, which will be held from December 8 to 14. It is pleasing to report that there is more than enough volunteers, and plenty of equipment in the way of radios and aerials has been loaned for the event.

It was announced that an Amstrad Computer Club Group has started in the North-West and any owner interested is welcome to attend their meetings.

One of our newer members, who has been very active in the club as News Co-ordinator for the Branch since arriving from VK5, has left to live in the United Kingdom. It is hoped to encourage activities and provide assistance to interested people, support and maintenance of ATV activities amongst amateur radio members in conjunction with other radio activities.

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The implementation of X.3 TIP into the AX.25 protocol puts Australia in the front line of worldwide amateur packet radio development, as up to now, the US and Canadian amateur radio groups have dominated development.

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—Contributed by Peter O’Connell VK2EMU
Lyle VK4ALD (with hat) and Robb VK4TKA.

with the Rockhampton/Fitzroy State Emergency
Queensland District and Gary VK4PY, from
Etna Creek Prison Farm, organised a Leisurefest
Service.

Queensland Branch, obtained a site in association
VK4BMW Max 7.07S Mount Isa
for the day were 20 and 40 metre dipoles and a 15
Gympie, called in.

The Wireless Institute of Australia, Central
Various

Even with the close proximity to 4RO and other
The station was operated with a FT-707 and TS-
bers and forms will be available at the Show-
numbers must be obtained in advance. Contact
information
one hour before the departure time of the
train.

The Field Day will be held whether the weather
is wet or dry as there is plenty of shelter at the
Showground. Tea and coffee will be available from 8 am
to 5 pm (separate from the Food Bar) at no charge.
Accommodation is usually scarce on the Central
Coast at Field Day time, and early booking is
advised.

Morning trains departing Newcastle and
Sydney and arriving at Gosford between 8.30 and
10.30 am, are met at Gosford Railway Station and
a courtesy bus is provided to the Showground. For
return transport in the afternoon, contact infor-
mation one hour before the departure time of the
train.

The VK2 QSL Bureau will be in attendance.
Companies, persons, groups or clubs wishing to
set up a table or display at the Field Day should
contact the Central Coast ARC at PO Box 238,
Gosford, NSW. 2250 before January 3, 1987. Any
telephone inquiries may be made to John Pogson
VK2DBC, on (043) 25 9552 between 8.30 am and
4.00 pm weekdays only.

FCC PROPOSES . . .
The FCC has proposed authorising additional
frequencies between 7.050-7.075 MHz for Novice
and Technician operators in Alaska, Hawaii,
Region 2 Pacific Insular Areas and the Caribbean
Insular Areas.

—From The ARRL Letter October 13, 1986

PROFESSIONAL ALERT

CRRL has become concerned about a new radio
navigation system operating from the west end of
Lake Ontario on or about 432 MHz. The frequency
assignment appears to be legal. Amateurs use the
430-450 MHz band on a secondary basis. How-
ever, the assignment appears to have been made
without due regard for potential interference. The
broadband nature of the system's signals threatens
to affect terrestrial and EME communications
near 432 MHz and satellite communications near
435 MHz. Also, amateur signals could inadver-
tently interfere with the system, creating possible
danger for ships that rely on it. CRRL is pursuing
the matter closely.

—From The ARRL Letter October 13, 1986

AMATEUR RADIO, December 1986 - Page 57

Lyle VK4ALD (with hat) and Robb VK4TKA.

The 20 and 40 metre dipoles for Leisurefest
1986.

El Ins Creek Prison Farm, organised a Leisurefest

The Wireless Institute of Australia, Central
Queensland Branch, obtained a site in association
with the Rockhampton/Fitzroy State Emergency
Service.

The Station VK4WIR was operated on Sunday,
September 21, 1986 from 2300 to 0700 UTC.

Various visiting stations from the Central
Queensland District and Gary VK4PY, from
Gympie, called in.

The station was operated with a FT707 and TS-
520 plus various two-metre equipment. Antennas
for the day were 20 and 40 metre dipoles and a 15
metre whip.

Even with the close proximity to 4RO and other
electrical devices, the station was able to make
contact with the stations below.

VK4BMW Max 7.075 Mount Isa
VK4FNO John 7.075
event.

At the September meeting, the members of the Division voted to keep the VK1 component of the fees at the same level as the previous two years — $9.50. Due to a steady increase in the number of members, and tight financial management, we are able to run against the general trend in the country and not increase charges.

**WIA 75TH ANNIVERSARY MEDALLIONS**

A little belated, but the following VK1 amateurs were awarded 75th Anniversary Medallions for their outstanding contribution to the advancement of amateur radio and the WIA.

VK1AO Peter Smith
VK1DS Tim Mills
VK1VP Eddie Penkis

Space precludes describing the many ways in which the above have served their fellow amateurs, but all have made significant contributions to our hobby, and rightly deserve our congratulations.

**PACKET RADIO**

At the time of writing, the VK1 Division was in the process of establishing a packet digipeater. The digipeater will be located on a fire tower in the Kowen Forest, a few kilometres to the east of the centre of Canberra. While technical details are not yet confirmed, the digipeater should operate on 147.575 MHz, using the call sign VK1RPM. Output power will be 25 watts, and should give good coverage to Canberra and the surrounding area.

The digipeater is built around the TAPR TNC unit, and supports the AX.25 protocol. In the future, a more ambitious installation may be interleaved, supporting a number of protocols, and forming part of a major packet radio network.

---

**Forward Bias**

Ken Ray VK1KEN
Box 710, Woden, ACT 2606

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**VK2 Mini-Bulletin**

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2120

---

**VK4 WIA Notes**

To all members in Australia and their families, may we, the amateurs of Queensland, wish each one of you, a very Merry Christmas and a Safe, Peaceful and Prosperous New Year.

**GYMPIE GOLDFEST 1986**

 Held on Saturday, October 11, this first Gympie Goldfest was a success. The organising committee of the Gympie Amateur Radio Club can be well pleased with the interest shown in this event.

Some 200 or so amateurs and friends visited the venue, the Chatsworth Hall, a few kilometres north of Gympie. It was a great day for meeting old friends, looking at the displays, listening to lectures and seeing some demonstrations of state-of-the-art packet radio or taking part in fox hunts.

Amateurs came from far and wide and a quorum of Divisional Councilors were there. David Jerome VK4YAN the Queensland Divisional President, was introduced to the gathering by Alan Gardner VK4BWG, to officially open this first Gympie Goldfest, but certainly not the last.

**CENTRAL QUEENSLAND SIX METRE REPEATER**

The planning for the repeater took a step further when the Queensland Council approved a recommendation from QTAC that a six metre repeater application be established in the Rockhampton - Gladstone area. The application was submitted by the Gladstone Amateur Radio Club, who were commended for their excellent presentation.

Now, all that remains is all the hard work involved in getting this repeater on the air. Rockhampton and Gladstone amateurs are cooperating in this project. Progress reports will be made as time goes by.

---

**VISITING NORTH QUEENSLAND IN 1987?**

If you are planning a trip into tropical Queensland in the near future, think about making it towards the end of September.

Why? That is when the North Queensland Convention will be held under the auspices of the Townsville Amateur Radio Club. It is held every two years and visitors are made very welcome. If you have not tried North Queensland hospitality, you haven't lived!

— Bud VK4QY

**QUEENSLAND NETS**

The North Queensland News Broadcast Net is held an Sunday nights at 8 pm on 3.605 MHz. Operator is Evelyn VK4EQ using the Club Call Sign, VK4WIT. Reports from office bearers for the annual report must be submitted by this date.

At the September meeting, the members of the Divisional Office. If your household is perplexed for a Christmas present for you, drop a hint that you would really like a book available, upon request, from the Office. Telephone (02) 688 2417, Monday to Friday, 11 am to 2 pm or Wednesday 7-9 pm.

There will be limited copies of the International and USA Call Books and the 1987 APRL Handbook arriving early in the new year. Cost is unknown until the shipment arrives.

Do you find it hard to keep up with all the news? The Broadcast time-slots do not suit? You only hear about something days after it was on the Broadcast? And then the person telling you only heard it or was told by someone else. Then maybe the answer is to check the recorded news summary available from Monday to Saturday on (02) 651 1489.

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**NEW MEMBERS**

A welcome to the following new members for October.

J E Iliaxi Angac Bowrat; J Harnema Angac; Rose Bay; M J Knorr Angac; Unanderra; A M Love VK2EZF; Crows Nest; D R Moore VK2XAR, Leichhardt; S J Oldroyd VK2JSO, Concord; S J Ross Angac; Greytiques; G J Selwood Angac, Orange; D J Stephen VK2PWO, Minto; P J Turner VK2ZNN, West Ryde; G I Waite VK2MMW, Bingara; D A Waugh VK2JDW, Blacktown; D G Lengronne VK2MAI, Lidcombe.

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**Bud Pounsett VK4QY**

Box 638, GPO, Brisbane, Qld. 4001
I was pleased to receive a letter from Graham VK7ZO, recently regarding my paragraph in October’s AR about a home-brewing frequency on 3579 MHz. Graham says he has recently built the Drew Diamond VKX5L, which turns out to be VXX, and has obtained crystals for that frequency. At the time of writing to me, Graham had only had contact, and that was with Bob Tester VK5MV, one of the members of the Slow-Morse Panel members, from Mount Gambier.

Dare I say, Graham, that maybe one reason for the lack of contacts was the fact that you have been CWing at 20 WPM! The group which first promoted the Home-Brew Frequency-Idea were the Port Lincoln ARC, who at the time were tuning their group in from Port Lincoln High School and St Joseph’s College. These children were building their home-brew QRP rigs as part of the project, and although they were learning CW, I imagine most of them were only up to five words-per-minute for the Novice Licence. I know that their teachers in CW, Jack VK5AJK and John VK5AEP (both Slow-Morse Panel members), could handle that speed, but perhaps some of the students would be encouraged to answer something a little slower.

Anyway Graham, don’t give up trying just yet, and perhaps those higher-power and commercial rigs could leave the frequency free if possible to give our home-brewers a spot to find each other. Your reward may not be in Heaven, but it will certainly be in encouraging experimenters and home-brewers, many of them young — a breed we are often told, that is dying out with the introduction of “Black Box” electronics. We have already had the benefit of his work; the man who looks like having a big future in this very special call sign.

Speaking of young experimenters, we gained some excellent PR on Channel 7’s State Affairs thanks to a segment that they did on Grant Willis VK5M. At 5.25pm on November 15th they went live in VK5, and possibly Australia, a very talented young man who looks like having a big future in electronics. We have already had the benefit of his experience, when he helped John VK5EV, to set up the ATV display at Marion Library. Congratulations Grant and thank you once again for that excellent piece of PR.

Keith Ring VKSKH, at Kapunda, recently donated a Panda rig to the WIA for use on 40 metres for the Sunday Morning Broadcasts, in Melbourne. The main problem seemed to be finding somewhere to house it for the time being, as none of the current operators needed it immediately. Our thanks go to Ross Dow VK5KR for finding it a home, and to Mike Fallee, and the Paddle Steamer Gulf Yachting Regatta. The one name that comes to mind when we talk of the WIA’s Jubilee Year. In fact, of course, it was more like 18 months, giving us the benefit of his work, but it will certainly be in encouraging experimenters and home-brewers, many of them young — a breed we are often told, that is dying out with the introduction of “Black Box” electronics. We have already had the benefit of his work; the man who looks like having a big future in this very special call sign.

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I would like to take this opportunity to wish all a very happy Christmas and a year of good propagation and low noise levels!

DIARY DATES

DECEMBER
9 Christmas Meeting at 8 pm. Looking Back at Radio in SA — an Audio History produced and presented by John Hampal VK5SJ and Gordon Welsh VK5GS, with the help of Kevin Kitto and the Glen Lea Singers — Woodville Community Hall, 64C Woodville Road, Woodville (between Port Road and the Railway Line, on the right-hand side, before the Council Offices).

Bring your partner and also a plate of food. The WIA will provide chicken and salad platters, sausage rolls, pies and pasties, all drinks, etc. Interstate and country members welcome.

JANUARY
27 Traditionally a Buy and Sell night. Please note it is a fourth Tuesday, so excuse the OSL penalty for fast, reliable operation.

JSA AWARD WINNERS continued

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GET YOUR MORSE UP TO SCRATCH IN 1987 WITH . . .

MODEL 610
POST OFFICE PATTERN
MORSE CODE KEY

---

Price $55 Post Paid

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AMATEUR RADIO, December 1986 - Page 59
HAMADS

I can attest to the "puling" power of Hamads, inasmuch that I received the first reply to my advertisement in September's magazine, on September 5. The chap asked for 48 hours to consider but I told him that it was first come, first served. Anyway, next day another customer.

The first person came within 24 hours, discussed the equipment, and swapped some cash my way! From then on an irregular series of others were in contact, the last on September 25.

In view of this success I will use Hamads again (this month, in fact!)

I was most impressed with the October issue of Amateur Radio and would like to congratulate all concerned with the edition and the many who contributed articles. 

Yours faithfully,

R Easterbroek VK3RM, c/o Eliza Lodge, 347 Nepean Highway, Frankston, Vic. 3199.

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TRAFFIC SYSTEM

The Mexico, now El Salvador earthquakes have highlighted these ideas.

I would suggest some close liaison in the USA between the Pacific Area Net (PAN) and Eastern Area Net (EAN), so that the National Traffic System (NTS) can respond to changing propagation from week to week. During the Mexico and El Salvador earthquakes, propagation changes were constant to Australia. This idea needs further and issuing a Notice of Proposed Rule-making in the USA has an international links.

Such an international co-ordinator/s based in the USA could:
1. Send directives needed to re-route international traffic through the National Traffic System (NTS) in accordance with the propagation feedback received from the PAN and EAN international arms.
   Comment: it would be nice if propagation were constant to Australia. This idea also points a way to the problem of long international links.
2. Use the expertise developed on the international traffic nets normally feeding EAN and PAN to establish a co-ordinator to any part of the world affected by a disaster.
3. When any disaster occurs world-wide, to contact the US administration and foreign consulate to seek immediate verbal authority to handle Third Party Traffic to that country.
4. To expand during any disaster anywhere, the normal international schedules with Australia who depend almost totally on their authority to handle their welfare inquiries.
5. To send a directive to Australia, that traffic capabilities to a specific disaster area, not normally covered by EAN or PAN, to handle their welfare inquiries.

Comment: Australi'an amateurs can pass traffic to any country the USA has an agreement with, provided we do it via a US or Canadian station. We now also have an agreement with Israel, in which we have three direct traffic agreements.

Yours faithfully,

Sam Voron VK2BYS, Coordinator ATN, 2 Griffith Avenue, Roseville, NSW. 2069.

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COUPLE OF THINGS WRONG

The April issue of Amateur Radio with its striking cover, was in my possession, or I would have commented earlier.

On page 31 is the following note:

The ARRL has refused an FCC proposal that would turn the 52-54 MHz portion of the six megahertz band over to non-amateur computer enthusiasts who would use it for data exchange.

There are a couple of things wrong with this. First of all, this is not an "FCC proposal." It is simply a petition for rule-making, originating from outside the Commission, on which the FCC has taken no position at all. In accordance with the Administrative Procedure Act, the US legislation which among other things guarantees the right of public participation in the rule-making proceedings of executive agencies, the FCC has simply established a file number for the proposal and made it known that the public may comment on it.

ARRL has done so, and of course our comments oppose the proposal. With any luck, the Commission will simply deny the petition and terminate the proceeding. To the FCC, and to all of us, lack of technical flaws in it. Should the Commission wish to seek further comment it may do so either by issuing a Notice of Inquiry, or by going one step further and issuing a Notice of Proposed Rule-making in which specific new rules would be proposed. It is only the last option which could correctly be characterised as an "FCC proposal."

In the case of either an NOI or an NPRM, there would be an additional opportunity for opposing comment by ARRL and others.

The second problem that I have with the brief item is that it conveys that ARRL has the power to "refuse" proposals which impact the amateur service. I wish this were true! The fact is that, while ARRL has considerable influence with FCC, the FCC has no obligation to follow our desires. This is one reason why we are so anxious that amateur radio speak with one voice to the FCC — that of our League — just as you would wish the representative voice of Australian amateurs with the Department of Communications to be the WIA.

I completely understand the difficulty any editor faces in condensing a complex issue into a few words, and hope these comments will be accepted in the constructive spirit in which they are intended.

73,

Sincerely,


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DE-SEXING ENGLISH

In reference to the Editor's Comment, October AR and in the "draftperson" instead of "draftsman" or "drafter."

The present cumbersome attempt to de-sex English is hilarious!

Considering "Chairperson" and "Spokesperson" for chairman and spokesman when all authoritative dictionaries define both latter words as a "person who etc.

Such stupidity makes "woperson" of woman and "luperson" of female!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily reflect that of the publisher.

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TELEVISION

I was pleased to read the correction in the Editorial, to the information from Wireless World, 1936, via VK3ZKU, given in the October edition of Amateur Radio concerning the inauguration of regular experimental television transmissions from Alexandra Palace, in November 1936.

I would like give further information showing that this was not the beginning of the transmissions from Alexandra Palace.

In 1935, I was a schoolboy at a boarding school in Hertfordshire, gleefully absorbing wireless information from the magazine Hobbies. Another boy (H D Thew) and I decided to make one of the three valve radios and later shortwave adaptors to plug into the detector valve sockets so that we could become shortwave listeners on the amateur bands. In the same year we formed a wireless club and built a 12-valve de luxe,督促 scanning disc television receiver. I wrote to Alexandra Palace to say that I had observed a face through the magnifying glass — the image coming through the spiral of 32 holes in the synchronous motor driven scanning disc from the photo-electric cell behind.

A nice letter came back saying that if the headmaster gave his approval, we could become a Baird Television Monitoring Station. This approval was given, and along came a beautifully made 32 definition Baird Mirror Drum television receiver, which we used to send a monthly log to Alexandra Palace.

In 1937 or 1938, after I left school, I remember watching programs on an all-electronic 495 definition Marconi-EMI receiver at the home of an engineer friend of my father. All transmission stopped, of course, at the beginning of World War II.

One last item of note — after being a SWL and electricity supply engineer for most of my life, I nobly failed the officer's course in 1947, but passed in 1982. There must be a message in that.

73,

Geoff Wallace VK4VL, 8 Orana Street, Victoria Point, Qld. 4163.

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A CRY FROM THE CROWD

Please hear a cry from one of the crowd of frustrated home-brewers in VK-land.

New black-box equipment prices are said to have nearly doubled in the last 12 or so months. Everyone seems to think that amateur radio equipment are offered at prices which, on consideration, seem high. Home-brewing is said to be the answer!

The amateur radio candidate and novice is often told about the joys of home-brewing, but unless they already have the parts, or can find them at the local electronics store, they are facing considerable disappointment. The Conditions, of course, demand that they have a stock of salvaged parts in the junk-box, but I would say that the novice usually has not.

Sometimes ago I took it into my head to build a transmatch type ATU and to re-build a power supply for a hybrid rig which I had obtained in good order. Much effort went into getting enough high voltage capacitors, bypass filters, and as for bleed resistors of sufficient power ratings — what a laugh. The hunt for a filter choke was eventually successful. The rig, now being operational, at least as far as receiving goes, the transmatch is not.

---
In fact, the search for transmitting variables began nearly 12 months ago. Seeing advertisement for them in AR and other places, I telephoned, only to be told that there had been sold, even prior to my copy arriving in the mail.

On a recent visit to Brisbane, I telephoned all the DX contacts and some unlikely suppliers in the Yellow Pages, only to be told that there had not even known what I was talking about. Most of those that did know said: "There’s no call for them," and have stopped asking for transmitting variables, roller inductors, ceramic wafer switches, power resistors, high inductance filter chokes and so forth.

Or perhaps the profit margins on them are not so great?

Now I can hear a few saying: "Why doesn’t he build his own?" Few of us have the facilities or skill to build variable capacitors, but we can assemble them into working devices.

A recent Prime Minister said: "Life wasn’t meant to be easy." Someone also said that it wasn’t meant to be impossible either. So come on all you frustrated home-brewers, put a little pressure on your favourite electronics store for the parts you need. I’m sure they can obtain them. Of course, some of these things will sell quickly. Come on magazine editors, what about a Where to get it! section for home-brewers. It is no good publishing home-brew articles if readers cannot obtain the necessary parts.

Yours faithfully,

Ken England VK4JPE
31 Morgan Street
Rockhampton, Qld. 4700.

REVIVE THE PAST TO BEAT RISING COSTS
The prospect of continuing price increases for "black boxes" has been clearly indicated in the statements by major resellers in the October issue of AR.

The situation has developed into a sort of "abandon hope all ye who enter the ranks of amateur radio" syndrome. And we in Australia, having to face up to the politically declared "Banana Republic" image see little prospect of an immediate improvement.

So we must seek a strategy which will, for the time being at least, retain the interest of existing amateurs and appeal to prospective enthusiasts.

My embryo proposal is to associate with a number of radio amateurs, both VK and DX, and has met with approval and encouragement. Perhaps many will consider it a backward step and consider it thought as contrary to the advancement of the art.

My proposal is to set aside a portion of certain bands, say 2, 6, 10, 15 and 80 metres, for the use of "black boxes". At the very least, I envisage a loss of a portion of the spectrum to these "up market limited operators." This type of licence will not open any further entry points into the hobby, as the present limited licence caters quite adequately for those having difficulty with CW and can only serve to create further divisions.

I would object to losing a portion of the HF band to under qualified operators. If their interest lies purely in transmitting radio and not in sharpening their operating skills, it would be advantageous to both them and the rest of the hobby if they operated QRP into a dummy load, it would save power for them and spectrum space for the rest of us.

I urge all true operators to reject these proposals . . . outright.

Yours sincerely,

Ross Cummins VK2CRJ
39 Hague Street
Rutherford, NSW. 2320.

COCOS-KEELING
I am more than a little disappointed in the How’s DX? editor’s treatment of the article on Cocos-Keeling Islands in the October AR.

The story is full of holes, omissions and in fact does little to enlighten the reader about this amazing coral island. Further, the editor hardly touches on the main reasons for DXer to be interested in the location, which would be, put simply, to make contact with it on his favourite band.

For some time now, I have held the belief that there is severe criticism and discrimination against those amateurs, who by their individuality and different pursuit, dare to set themselves apart from the so-called norms of amateur radio.

If you behave or do things in a different way, then you can expect to be ostracised by the mainstream. In this case, that mainstream would appear to be the "accepted" DX operation. Minnesota, and the unique opportunity of being able to make contact with those operators who I believe other amateur’s worldwide. It would be much appreciated if representatives from local radio clubs would visit the vessel whilst at anchor and offer any assistance with technical service and/or the amateur communications.

Any further information may be readily available per telephone (02) 477 6275 or for the undersigned

Al Davis-Rice VK2AXR
396 Pacific Highway Hostel
Hornsby, NSW. 2077.

RECENT MOOTING
I write this letter somewhat hesitantly, I have been an amateur for six years and prior to that I spent several years as a professional operator. In that time I had not perceived, until recently, a threat to the enjoyment of our hobby that I deemed serious enough to cause me to put pen to paper.

The threat to which I refer is the recent mootings by some, to have a further class of licence introduced. The reasons given have been that the technical side rather than operating ability; ie Technician Class. Now I can hear a few saying; "Why doesn’t he build his own?" Many of us have the facilities or skill to build variable capacitors, but that’s another story. No, one might say, it’s like the six metre operations from VK9Y and VK9X which netted 20,000 contacts and 25 countries.

But try and find that in any WIA Journal.

Steve Gregory VK3OTJYT
PO Box 822
Hamilton, Vic. 3300.

SETTING THE RECORD STRAIGHT
My attention has been drawn to an article in a United States magazine which stated that, following the opening of the 12 metre band for American use, the first DX contact was some 20 minutes or so later.

I would like to set the record straight, at least in our own magazine, by advising that the band was opened on June 22, 1985 at 0000 UTC and I was immediately in QSO with N6JFG, Los Angeles, our own magazine, by advising that the band was opened on June 22, 1985 at 0000 UTC and I was immediately in QSO with N6JFG, Los Angeles, California. It was opened on a calling channel on 24.650 MHz and this system remains in use. Brian KSST, formerly of San Francisco, but now at Manhattan Beach, LA, makes us aware of various QSOs of Operation Raleigh. The call sign VK9Y/MM is used when the vessel is on 24.650 MHz and I do the same at this end.

There are good openings and we have found that if the 15 metre band is anywhere near operational, then there is a good chance on 12 metres that worked the island by way of a non-aligned DXpedition, just as they did when they worked Brazil in 1986.

The message to non-conformists is loud and clear, between the lines. Fortunately, maybe only 12,000 people read the column and over four times that worked the island by way of a non-aligned DXpedition, just as they did when they worked Brazil in 1986.

Your welcome.

Joe Ellis VK4AGL
Burnside Road
Nambour, Qld. 4560.

OPERATION RALEIGH 1984-1988
An opportunity has arisen for amateurs to be associated with Operation Raleigh by offering assistance as may be required to the flagship Sir Walter Raleigh as she visits the various Australian ports. Proposed dates are — Brisbane November 26 to December 7; Sydney December 9 to 12; Melbourne December 15 to 20; and Fremantle January 3 and 7.

The vessel is a ex-Hull Trawler of 1900 tonnes and has been converted for use as a support vessel for various phases of Operation Raleigh. The ship’s Radio Officer, David Legge, is also a radio amateur (G3SYF), and has been allocated the call sign VK4SWR/MM and will use this call sign on the Australian coast. The call sign GB0SWR/MM is used when the vessel is at sea.

An additional radio amateur is normally welcomed onboard as there is a requirement for a skillful, experienced man to undertake the servicing of any of the radio equipment used in the fields, either on vehicles or boats, as required.

The amateur on board has the use of a FT757 and the unique opportunity of being able to make various QRV contacts to DX amateurs worldwide. It would be much appreciated if representatives from local radio clubs would visit the vessel whilst at anchor and offer any assistance with technical service and/or the amateur communications.

Any further information may be readily available per telephone (02) 477 6275 or for the undersigned

Al Davis-Rice VK2AXR
396 Pacific Highway Hostel
Hornsby, NSW. 2077.

Have you noticed any errors or omissions in the 1986/87 Call Book?

Please advise the WIA of any corrections as work has commenced on the 1987/88 edition.

Write to: PO Box 300, Cufield South, Vic. 3162.

Please enclose information as in Call Book and corrected information

AMATEUR RADIO, December 1986 - Page 61
OBITUARIES

STEWART D P SMITH VK4LA
Old-timer Stewart Smith VK4LA, became a Silent Key suddenly in the late evening of May 20, 1986. His passing leaves a noticeable gap among the many amateur operators who were proud to have called him their friend.

Stewart became a licensed operator on June 1, 1934, at which time he was a member of the Technical Staff of Radio Station 4BC, in Brisbane. He remained with the station until August 1941, when he joined the RAAF. He later saw service in the United Kingdom, as a Wireless Navigator in 456 Squadron, RAAF and was mentioned in Despatches.

After the cessation of hostilities Stewart returned to Australia and soon after was appointed Clerk of the Technical Section of the Visual Education Branch, in the Queensland Department of Education. He remained with the Department until his retirement in 1969.

He was the true "Foundation Member" of Jamboree on the Air in Australia, taking part as an amateur operator since its inception in 1938 and continued his association with every one of these events, as late as 1985. He was instrumental in arranging for the procuring of the first licence for a Scout, or Guide Headquarters Amateur Radio Station in this country, when in 1964 he assisted the Queensland Branch Headquarters operator, to obtain it (VK4QH, now VK4SA). He was the nominated Station Manager until he retired for health reasons a few years ago and for his services to the Association was awarded the gold "For Services Rendered" Badge, an award he wore with pride.

Even after his retirement as Station Manager, Stewart continued to maintain a keen interest in this station.

Stewart's final contribution to Radio Scouting and Guiding was in January 1986, when he offered his services, and was accepted, as Station Manager for the International Guide Camp Broadcast Station, operating out of their camp at Greenbank, in Queensland with the call letters 4WN.

Stewart made many friends in Scouting and Guiding circles at all levels from Chief Commissioners, down to the boy and girl level, because of his friendly, relaxed manner always brightened the day. He will be sorely missed.

—Contributed by Noel Lynch VK4BNL and Jack Griffin VK4JG

71 years, had spent most of the last 12 months in various hospitals receiving attention.

In the 1930s, John joined the State Electricity Commission of Victoria Electrical Laboratory, Yarraville. With the outbreak of World War II he joined the RAAF and, as a member of Aircrew, carried out many missions as a navigator.

With the cessation of hostilities, John returned to the SEC and, until his retirement, was active and engaged, as Design Engineer, in protection and stability studies associated with the system operation.

In the 1970s, John took out an amateur radio licence, thus making many overseas and Australian friends. John also gave a considerable amount of time as a volunteer worker in the running of the WIA Victorian Divisional Office.

John is survived by two sons, Daniel and Mark, and a daughter, Julie, who resides in Cudthorpe. On behalf of his amateur friends and myself, I wish to offer thanks for his friendship.

Reg Busch VK3LS

AR

MAURICE (MAURIE) PFEFFER VK4ANU
The untimely death of Maurice on September 30, 1986 robbed the Darling Downs Radio Club of one of its most enthusiastic members.

At the time of life when most hardworking and successful persons are considering retirement, Maurie turned his attention to amateur radio in 1980, and quickly progressed to his full call.

His dedication to the hobby was shown by his faithful attendance at executive and club meetings. This necessitated a round trip of 200 km from his agricultural property sometimes twice a month.

He served his fellow amateurs with regular participation in many club nets and as net controller his big signal was heard far and wide.

In common with all other discerning operators, he devoted many hours to home-brew antennas and his many friends followed, with great interest, his persistent attempts to defy the law of gravity and keep his giant three-band quad airborne.

Two more of his many talents were displayed to the association, and he was a foundation member of the Pistol Club.

Despite extensive chemotherapy and radiatum treatment, his health continued to decline.

A very close family man, Maurie will be sadly missed by his wife Melba, their children and their families, and his many, many radio friends, including the members of the VK4 Disabled Persons Radio Club (VK4DBB).

Maurie's attitude towards this Club was one of interest, companionship and concern. His able support could always be relied upon during Club activities and he rarely missed the weekly net on 80 metres.

Even in times of severe illness, his cheery manner always brightened the day. He will be sorely missed.

Dearest sympathy is extended to Melba and family.

—Contributed by Eric Wisseman VK4AOD and Rodelling, Lavers Hill, on behalf of the Darling Downs and the VK4 Disabled Persons Radio Clubs.

BILL DOUGLAS VK3GA
Bill was a veteran of both World War I and World War II.

Enlisting for the first conflict at the age of 17 (having relinquished his position as a Junior Teacher at Mount Macedon), Bill was drafted first to the 2nd Division, and left Australia as a member of the 8th General Service Reinforcement. In England, he was transferred to the Artillery, and on arrival at Le Harvre, France, was ordered to join the 11th Howitzer Battery. He served with this unit for the remainder of the war, and action took him to Northern France, including a spell in one of the most hard-fought battles of the war, the campaigns around Villers-Bretonneux.

He gained the rank of Artillery Sergeant. At the close of hostilities, he remained for a time as a member of the Australian Graves Detachment.

After three years service, Bill returned to civilian life and continued studying, gaining the degree of Bachelor of Laws. He re-entered the teaching service and was appointed to various country schools, including Lavers Hill, in January 1929, where he was licenced as VK3GA. On April 18, running 2.1 watts input from a battery, he made his first amateur radio contact, with VK3PP Captain Payne, Patrolman of the WIA. This was the first of some 16,000 contacts which Bill was to make in the following years. His QSL card, of novel design, told the new acquaintance that the now familiar boomerang with the words, "Comes back to you."

Lavers Hill was the scene of some unique public services. Test cricket was of interest to a host of friends in those days, and with the cooperation of the local postmistress, who was also the telephone operator, Bill relayed the cricket broadcasts direct from England to all subscribers in the district, Nothing could have made him more popular.

By 1934, Bill had gained a second university degree — Bachelor of Arts. War clouds loomed again. In 1940, after enlisting in the AIF he was awarded, on joining the RAAF, the rank of Flight Lieutenant, becoming an Education Officer. 1943 saw him in New Guinea with 9 Operational Group, with service at Milne Bay, New Britain and Arawe.

Discharged in August 1945, he resumed teaching and became involved in the Victorian State Schools Sport Association. Amateur radio was re-activated and his call sign was regularly heard on CW, and DX was the main interest.

An intensely active person, Bill was not only keen on camping, amateur crossword, but also an enthusiastic sportsman, his proficiency at tennis even when in his late 60s earning him considerable respect. Amateur radio claimed his quietest moments. Bill's shack, with its tiered display of cards was colorful, effective and impressive. Countries confirmed could be proved in a second. There were 286 of them.

This year a tower and four element beam had gone up behind the garden. Bill, now one of the older gentlemen, had hoped to extend his DX tally. Unfortunately, illness beset this modest veteran and he passed away on September 8, in his 87th year.

To his wife Lorna, his daughter and four sons, amateurs who remember Bill extend their kind thoughts.

Maurie and Melba.
Ionospheric Predictions

PATH 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31.

PATH 4 2 3 0 1 7 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31.

PATH 8 2 3 0 1 7 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31.


LEGEND

From Western Australia (Perth)

From Eastern Australia (Canberra)

Mixed mode dependent on angle of radiation (long broken lines).

Better than 50% of the month, but not every day (continuous lines)

All paths unless otherwise indicated; (ie LP = Long Path) are Short Path.

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

Solar Geophysical Summary

AUGUST

Solar activity continued to be low in August with no energetic solar flares observed.

A number of small regions were visible on the solar disc during the periods 01-09, 12, and 19-31. The small size of these regions is reflected by the daily 10 cm flux values for the month, peaking at 71 on the first with a low of 66 on 13th.

The regions observed were mostly 'reverse polarity' and the increasing presence of these regions indicates that the start of the new solar cycle is not too far away.

The 10 cm readings for the month were:


The running yearly average was 13.2 at February 1986.

GEOMAGNETIC

August was the most disturbed month since February 1986. There were three periods of disturbed conditions, the longest being 20-25th.

- August 3-4 The field became disturbed early of 3rd and remained disturbed until the middle of the 4th. A = 19, 22.

- August 20-25 The field became disturbed after 1500 UTC on 20th and remained that way until mid-25th. The most disturbed period was between 0300-0900 UTC on 22nd. A = 16, 27, 24, 26, 19, 19.

- August 27 The field was disturbed between 0700-1400 UTC. A = 18.

- August 28-31 The field was disturbed from 1200 on 28th until 0600 UTC on 31st. The most disturbed period was 1800-2100 UTC on 30th. A = 20, 23, 18.

—From data supplied by the Department of Science, IPS Radio and Space Services, August 1986.

DEADLINE

All copy for inclusion in the February 1987 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, January 2, 1987.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.
TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price lists 105mm SASE to: R & J US IMPOR CON Box 157, Mordale, NSW 2223. (No inquiries at office ... .

OLD SLAVE CLOCKS: Of the type that were driven off master clocks in the head office of factories & Govt buildings of yesterday. Slave units were stopped on a pulse every 30 secs. Rep VK2PW, Ph:(063) 65 3410.


HY-GAIN TH6-DXX: 6 element beam. $450. Peter VK7AN, QTHR. Ph:(002) 39 1391. VK7AN, QTHR. Ph:(003) 31 7914.

WANTED — NSW

WANTED — VIC

ANY "RARE" recordings of amateur radio contacts for Volume 2 of "The Sounds of Amateur Radio." We are particularly interested in recordings of bands now not available to Australian amateurs, eg 112, 288 ppm, $18 per crystal including post. Mail orders to: ANTENNA TUNING CAPACITORS: 4016: with Commodore Tractor 3333 BH.

WANTED — QLD

AMATUERS REQUIRING: SR DXQ 40 M 6M +Tuner. Phil VK6AM. Ph:(07) 271442.


HY-GAIN TH6-DXX: 6 element beam. $450. Peter VK7AN, QTHR. Ph:(002) 39 1391. VK7AN, QTHR. Ph:(003) 31 7914.

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HY-GAIN TH6-DXX: 6 element beam. $450. Peter VK7AN, QTHR. Ph:(002) 39 1391. VK7AN, QTHR. Ph:(003) 31 7914.
Yes this new from EMTRON — highly accurate CROSS-NEEDLE SWR & POWER Meter, model EP-200 worth $99, comes ABSOLUTELY FREE with every KENWOOD or ICOM HF transceiver such as:

TS-940S, TS-440S, IC-735, IC-751

We offer BEST PRICES in Australia on all KENWOOD Products!!
The ham burger with the lot – IC-751A

LOUD & CLEAR
- All HF Band Transceiver/General Coverage Receiver
- 100% Duty Cycle Transmitter
- New Design
- 105dB Dynamic Range
- 12 Volt Operation
- All Modes Built-in USB, LSB, AM, FM, CW, RTTY

The new IC-751A top-of-the-line HF base station transceiver is designed for the ham operator who demands high performance. Whether entering contests or QSY’ing for pleasure, the 100 watt IC-751A incorporates the best features of the IC-751, and brings you to the forefront of technology with the following most-requested additions.

More CW Control. For the CW enthusiast, the new IC-751A includes an electronic keyer unit, QSK rated at up to 40 WPM, standard FL-32A 9MHz/500Hz CW filter and CW sidetone to monitor your code in RX or TX modes... great for practice!

All Amateur Band Coverage. Includes general coverage reception from 100kHz to 30MHz, and may be easily modified for MARS operation.

Please send me details on:
- [ ] IC-751A
- [ ] ICOM's full range of communications equipment

Senders details:
Name: 
Address: 
Postcode: 
Phone: (Business) (Home)

All stated specifications are approximate and subject to change without notice or obligation. ICOM customers should be aware of equipment not purchased at authorized ICOM Australia Agents. This equipment is not covered by our parts and labor warranty.

POST TO: ICOM, 7 DUKE STREET, WINDSOR, VICTORIA 3181, OR PHONE (03) 512284 OR 5297582

Improve Smooth Tuning. The IC-751A features a newly designed tuning control for velvet smooth tuning.

Added LED Annunciator. For easy identification if you’re using the tuning speed, dial, or band switching functions.

32 Memories. Mode and frequency data may be stored in any of 32 memories... all the memory capability that you’ll ever need.

More Stable. Even in the receive mode, the IC-751A has a sophisticated thermal sensor to monitor the internal temperature. The sensor automatically activates the cooling fan which gives maximum stability... critical for optimum performance during contests.

Newly Designed Features. The IC-751A boasts a number of newly designed features for better performance... a new 9MHz notch filter that drastically reduces QRM, a new AGC system, a new compressor for better audio clarity, and a new AF gain control system that improves control of the CW sidetone volume.

Options Available. Options for the IC-751A include the IC-PS30 external AC system power supply, IC-PS35 internal AC power supply, IC-AT500 antenna tuner, IC-EX309 microprocessor interface connector, SM-9 or SM-10 desk mics, IC-2KL linear amplifier, RC-10 remote controller, SP-7 or SP-3 speakers, IC-EX310 voice synthesizer and GC-5 world clock.

Optional Filters. FL-52A CW 455kHz at 500Hz, FL-53A CW-N 455kHz at 250Hz, FL-63A CW-N 9.010MHz at 250Hz, FL-33 AM 9.010MHz at 6000Hz, and CR-64 high stability 30.72MHz crystal filter.

ICOM
The Frequency of ideas.